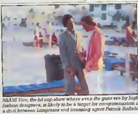
POPULAR
Computing
WEEKLY

Only 45p.

20 – 26 June 1985

It's the best selling weekly

Vol 4 No 25



MIAMI Vice, the hit cop show where even the guns are by high fashion designers, is likely to be a target for computerisation if a deal between Longmans and licensing agent Patrick Sinfield comes off.

Longmans has been discussing the project with Hewson Consultants, who it is hoped will be doing the coding once the deal is signed

First STs snapped up by UK houses

ATARI now claims that over 100 UK software houses will be developing software for its new ST computers

The company is currently in the process of selling 520 ST models to British software houses and hopes that by the *Personal Computer World* Show in September, the 520 ST will have an independent software base of around 100 titles

"About a third of the machines will go to business software companies, a third to companies specialising in utilities and integrated packages, and the remaining third to entertainment software houses," said Atari UK's sales and marketing manager Rob Harding

In the first two categories Psion, Precision, Triptych, First Publishing, and Hi-soft have all confirmed that they are writing for the new machine

"We will be converting our programs which already run on the 68000 processor for the ST," said Matthew Gaved of Psion. "We have expressed a great commitment to Atari,

continued on page 4▶

Sir Clive steps down in Maxwell take over



Publisher Robert Maxwell

SIR CLIVE Sinclair is to establish his own new technology research company, following the dramatic announcement earlier this week of an effective take over of his troubled computer company Sinclair Research by a subsidiary of Robert Maxwell's Pergamon Press – Hollis

Under the Maxwell deal announced on Sunday Sir Clive is to leave the board of Sinclair Research, the company he founded in 1978 and made into the world's biggest selling home micro manufacturer His holding will be reduced from 80% to around 20% but he will, however, continue as life president and research consultant

Maxwell now takes over from Sir Clive as the new chairman of Sinclair Research and Pergamon will announce the appointment of a new managing director for the company

First indications of problems at Sinclair Research came to light three weeks ago when the company announced it was looking for £15m additional finance to solve cash difficulties brought on by disappointing

continued on page 4▶

C128 PREVIEW INSIDE



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Vol 4 No 25

POPULAR Computing WEEKLY

View

There is a distinct feeling of déjà vu surrounding the dramatic events at Sinclair Research earlier this week.

Indeed, Sir Clive is developing quite a knack for building up and losing fortunes. As he was reported to have said on Sunday, "I am an inventor – I an awful at managing established businesses."

His first millions were made and lost in calculators Sinclair Radionics - his first company - found itself in financial difficulties back in 1976, when it failed to react quickly enough to cheap Japanese competition. The result was the company had to be bailed out by the National Enterprise Board and Sir Clive, after a short association with the NEB, left to establish a new company which became Sinclair Research.

Now he finds himself at very much the same sort of crossroads – with his holding cut to 10% and his company valued at £16m, down from £110m only a few months ago – and the outcome will be very similar, I have no doubt. Sir Clive is a loner and his association with Robert Maxwell is unlikely to be prolonged.

Already he is planning his latest start-up venture – more than likely using some of the team from Metalab to develop wafer-scale semiconductors. He has other cards to play, too – such as his proposed £100 satellite receiving dish.

He will find the going tough, pitching up against the silicon giants like Nation Semiconductor, but Sinclair's strength has always been to find new markets where others fear to tread.

He may be down, but he's not yet out.

Presents . . .





Futures . . .

The Great Caterpillar Race – Star Game on the Commodore 64 . . . Upper and lower case string handling on the Spectrum

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Computer Trade Association Magazine of the Year

Acorn's Italian rescue falters

ACORN Computer Group is considering selling off a number of its subsidiaries to raise additional cash.

The option is now being considered after the apparent failure of its 'rescue' in February by Olivetti to halt losses at the company.

The announcement of its new BBC Plus model in April has, it would seem, done little to ease the company's cash crisis.

Acornsoft, Acorn Video, Torus, and IO Bio are all subsidiaries whose sale from the group has been considered.

In addition, around 30 more staff are expected soon to be trimmed, adding to the 120 who have already been made redundant – since February.

Since Olivetti bought a 49% stake in Acorn, the Cambridge-based company's shares listing price on the Unlisted Securities Market has continued to fall, reaching as low as 9 pence at one point. Currently the price is around 12-13 pence.

Among those companies hardest hit by Acorn's failure to solve its difficulties is its largest creditor AB Electronics which manufactures Acorn's BBC micro. "There are obviously some difficulties at Acorn, and its performance has been disappointing," said Henry Kroch, managing director of AB Electronics. "Olivetti taking a stake was only one step," he continued, "The next stage is to reorganise management, and then inject more cash."

The appointment of Olivetti's Alex Uboldi as Acorn's acting managing director (see *Popular Computing Weekly*, June 13) indicates that the company has still to fill the post permanently. "There are plenty of circumstances to suggest that trading at Acorn is not good," said Robert Miller-Bakewell of stockbrokers Wood-Mackenzie.

"They have still failed to find an external chief executive. It seems likely that Olivetti may now have to take its stake in Acorn to over 50% in order to provide the extra cash."

Firebird buys Runestone

FIREBIRD has bought *Runestone* – the sophisticated graphics adventure – from Games Workshop.



A number of companies were known to be interested in the game including, at one point, Mirrorsoft.

Runestone was originally developed by Games Workshop for release as part of its own label, but then a buyer was sought following the company decision to scale down to software publishing activities.

Firebird has not yet fixed the price for the game but it will not be part of its budget label. "It might go out under the Gold range or form part of a new label – it partly depends on what we do about things like the manual and the book that goes with it," said a spokesman for the company.

Sinclair yields to Maxwell

◄ continued from page 1

post-Christmas sales and stock levels of over £30m.

"Sir Clive is forming a new company which will be dedicated entirely to research," said a spokesman for Robert Maxwell.

While Sinclair Research will initially continue research work with the new chief executive and board, it seems possible that Sir Clive may buy back its Metalab research facility for his own new company using money raised by selling off a further 10% of his Sinclair holding.

Plans for his silicon wafer fabrication plant, would then go ahead. The intention then is for Sinclair Research to concentrate on marketing Sir Clive's products.

The announcement of the Maxwell rescue package coincides with the announcement that Sinclair Research has now successfully tested its first commercial wafer-scale integrated circuits.

It is unclear what will happen to Sinclair US. "It wouldn't surprise me if Sir Clive established a new business to act as a vehicle for his inventiveness." Commented its head, Nigel Searle.

Hollis the buyers of Sinclair Research, is a publicly quoted supplier of office equipment and furniture, and is a subsidiary of Maxwell's Pergamon Press.

Maxwell is best known as publisher of *The Mirror* newspaper and as chairman of Oxford United FC.

Hollis is to acquire 75% of Sinclair for a nominal sum. £12 million will be raised through a 'three for one' rights issue at £1 per share.

Sir Clive will eventually retain around 10% of Sinclair Research. The remainder is to be taken up by investors and financial institutions.

The rescue values Sinclair Research at only £16m, compared with £130m eighteen months ago when Sir Clive sold off 10% of his company to institutional investors.

'Hackers' trial adjourned

THE TRIAL of two men accused of 'hacking' into the Prestel database in November last year opened at Bow Street court on June 12.

After a short hearing the trial has now been adjourned until July 4, after five more charges were brought against 29 year old Stephen Gold, and four more against Robert Schifreen, 21.

All the new charges referred to falsifying discs to break into Prestel computers under the 1981 Forgery and Counterfeiting Act.

As it is being seen as a test case to establish the legality status of computer 'hacking' the trial is expected to be lengthy.

Software for Atari 520 ST

◄ continued from page 1

and we are particularly interested in developing a version of *Chess*. The Xchange suite of programs is also a possibility, but won't be until later."

"Precision will be developing both *Superbase* and *Superscript* for both the Atari 520 ST and the Amiga machine," confirmed Nigel Lovett Turner of Precision.

First Publishing is hoping that its first titles for the ST will be available by October. "It depends entirely on the availability of the machine," explained First Publishing's managing director Sara Galbraith. First will be translating packages from German company Data Becker, *First Word*, *First Base*, *Pascal*, ADA, Forth, a relational database, and books on to the ST.

Triptych Publishing is currently evaluating the ST – its products for the machine will probably be marketed by Atarisoft.

Hi-Soft's David Link commented, "We have every intention of writing titles for the ST. The first will be languages, and programming tools, then after that we will extend to more consumer orientated items."

In the entertainment field, Talent Computer Systems, Firebird, Hewson Consultants and Beyond have all expressed interest in evaluating the machine but have made no firm decision to write for the machine. Melbourne House is sending an ST to its programming team in Australia, Adventure International expects import material from its parent company in the US, Mirrorsoft is planning a conversion of *Spitfire 40*, and Level 9 intends eventually to convert his complete range of adventures for the ST.

Popular Computing Weekly is offering a substantial reward for information leading to the return of equipment stolen from its offices on Saturday 8 June including an Apple Macintosh micro, serial No: FG2110OM001

Dixons cuts Plus/4 price under £100

THE HIGH street chain store Dixons is selling Commodore a Plus/4 computer for just £99 90 Four C16 games are included in the price

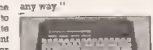
Dixons' price came into effect two weeks ago, but the company is not planning to change the offer, despite Commodore's announcement of the Plus/4 Business Pack for £449, comprising the micro, 1541 disc drive, MPS 801 printer and Impex software (see *Popular Computing Weekly*, 6 June).

"I don't know if we will be stocking the Business Pack," said David Gilbert of Dixons

Commodore had set up four 'bundling' packages for its computer range, largely in the hope that the major retailers would stop cutting prices

"Obviously Dixons is at liberty to do what it pleases over the prices," said a Commodore spokesman.

"We recognise that one of the best ways to make the Plus/4 attractive is to bundle it with peripherals, and our business pack was put together in consultation with retailers. Dixons' new price will not affect the Business Pack in any way."



Horticultural Microfair

THE Sixteenth ZX Microfair takes place this Saturday, June 22 The show is being held at the New Horticultural Hall, on the corner of Greycoat Street and Elverton Street, London SW1.

Doors open at 10 00am Entry for adults costs £1 50 and children £1 00

Logo and QL win awards for Sinclair

THE BRITISH Microcomputing Awards for 1985 were presented last week. The awards are organised by Thames Television, VNU Business Publications and the *Sunday Times*, and sponsored by Barclays Bank, Computer People, and W H Smith.

W H Smith's Game of the Year award went jointly to *Hitchhikers Guide to the Galaxy* from Infocom and *Impossible Mission* by Epyx/CBS

Sir Clive Sinclair collected two awards in person, the VNU Educational Award for *Sinclair Logo* and the *Personal Computer World* Home Micro Award for the QL A similar award, sponsored by *What Micro?* magazine, was given to the Atari 800XL.

Other award winners included the Penman Plotter (*What Micro?* Peripheral of the Year), Triptych's *Entrepreneur* and Oasis's *White Lightning* (Home Software – *Personal Computer World*) Thames Television's home software award went to Psion's bundled QL software Awards for business systems also went to ACT for the Apricot Portable and X1 machines, and Torus Systems for its *Torus Icon* package

Commodore digitiser from CRL

CRL is to bring out a video digitiser for the C64 and C128 designed by Austrian company Print Technik

By using a video camera connected to the micro, the software enables the user to digitise any image, print it out, enlarge the print-out, alter the image on-screen using a light pen or graphics tablet, and save pictures to disc

The video digitiser will be available at a price of £149 95 by mail-order from CRL now and in the shops after its official launch at the Personal Computer World Show in September

Decadent BT

I was absolutely appalled by your jovial review, and British Telecom's decadence in releasing a compilation of the five worst games that they have ever been sent I just can't believe that anybody could release such a bunch of weak, feeble, useless, boring rubbish!

In reality the best that the authors of the games could have hoped for was £10 if they submitted it to one of the computer magazines to be published as a listing It really makes me ill when you think that little kids who save up their pocket money are going to buy this because there are five games on the tape! I can't think who would ever contemplate buying it for a laugh!

If British Telecom can go to the expense of duplicating, advertising and packaging this useless five pack, then why don't they do it with some of their other titles, eg, *Booty*, *Mr Freeze*, *Subsunk*, *The Helm* and the over-rated *Moon Buggy*. Just think of the people who have submitted their games to Firebird Software, only to be told that their games were not good enough, then in the next breath Firebird release a compilation of games that are worse

Now that's what I call decadence British Telecom – you represent all that is bad in the software industry

Mr Angry ! ! !

Philosophical

In this week's issue of *Popular Computing Weekly*, Ziggurat contributor Boris Allan makes the statement that "Mathematics is one of the most human of endeavours, being totally invented, and the key to mathematics lies in its artificial nature".

For philosophical reasons this assertion is somewhat contentious, in that it can be argued that mathematical theorems are merely discovered by mathematicians, they have always "been there", as it were A simple example should illustrate the point I'm making Goldbach conjectured that every even number is the sum of two primes. This statement has neither been proved nor disproved, but it appears to be true

Before Goldbach stated his conjecture, one could say that even numbers "existed", as did prime numbers, therefore, they might or might not have had the required property As with most philosophical arguments there are two points of view

Leon Heller
8 Morris Walk
Newport Pagnell
Bucks

Confused

I am particularly interested in the ACT Apricot FIE computer which was mentioned in *Popular*, May 16.

The article was a little confusing in that I had previously heard that the FIE had 128K Ram as standard with the 315K disc drive

John Wheeler
30 Cavendish Road
Sutton
Surrey

ACT have altered the specification of the machine cutting the price, increasing the Ram to 256K and replacing the bundled Logo package with the Mac-type windows interface.

Best bargain

I felt I must write to tell you about a serious omission in your low-cost printers review. You totally missed the best bargain that I've seen I bought the Seikosha GP500A for the small sum of £129 + interface for my Spectrum + It does single and double width characters and full graphic Screen dumps It also is dot addressable and does repeats all on 10 inch tractor feed To me, it beats all those reviewed

Keith Turner
Quasar
60 Bowsport Point
Mellish St
London E14



What went wrong? I thought it was the car you were trying to sell to Maxwell '

Atari . . . 1

Why is it you call yourself *Popular Computing Weekly* when you virtually ignore one of the best sellers?

I am, of course, referring to the Atari computers Never has a computer been so ignored by the British computer press.

I suppose you could argue that you don't have enough space with the hugely popular (joke) QL taking so much space, but then it does have the Sinclair name

S Sanger
Essex

Atari . . . 2

I am writing to explain a few truths about the Atari home computers I realise that you will not want to print this letter as it concerns Atari (and this seems to be a rude word with your mag)

The plain truth is that if it was not for the Atari computers you would have little to review, since most American software (ie, the best software) is written for the Atari home computers first and is then translated (usually badly) for the CBM 64 micro, then later for the Spectrum

The Atari machines have:
1) Four sound channels
2) 256 colours (on screen at once if wanted)
3) Sprite Graphics (five per line max 125 possible at once)
4) Speech synthesis as standard (look at *Impossible Mission* or *Kissin Cousins*)
5) The largest software library in the world
6) 11 Graphics modes and five Text modes

I have got four computers: an Atari 800, a CBM 64, a BBC 'B' and a Spectrum in order of ability

I shall continue to buy your magazine as I like reading the news pages and your charts are good for a laugh – at least the Atari ones.

M E Holdam
Dewsbury
West Yorks

Atari's new machines look very exciting and we fully intend to give them extensive coverage in the magazine.

Aligning kit

I have seen a number of tape head aligning kits for sale recently At around £10 they are in my opinion rather a rip-off

To do the job all you need is a small screwdriver (very small) Price? Less than 50 pence.

This is what you do:
1) Get a tape that you know did load
2) Place it in the recorder and listen to it through the speaker (not too loud just about ⅓ to ½ volume will do)
3) With the play button pressed down and the tape running, place the screw driver in the small hole just above the play button (if you look in the hole first you will see a small screw) This is on the left edge of the play.
4) Turn the screw clock wise, and listen to the sound of the tape If it gets clearer, than keep on turning until it goes dull again. Then adjust back in an anti clockwise direction

If doing the above made the sound dull first then you are turning the wrong way, so just turn anti clockwise. I know all this sounds a little complex, but it in fact is not as hard as it sounds.

As you turn the screw, keep on listening to the tape Your ear is more sensitive to sound than your micro is in most cases So if it sounds OK to you it should load.

If it does not work then do the whole thing over again. It's sometimes better if you turn the screw too far as then you will hear more clearly the change from good sound to bad, and be more able to tell one from the other

M Sleight
103 The Avenue
Bently
Doncaster


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PROJECT PLANNER
Work out your best move to make the most of your opportunities
DECISION MAKER
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and make the best of it with Brainpower
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Are you really making the best of your micro – are you still using too much of your own brainpower?
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Skills that will help you make decisions
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With Collins range of Brainpower software you get a Teaching Program and Book which show you how easy Brainpower is to use on your BBC, Commodore 64 or Spectrum plus the main Applications Program itself.
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OUT OF A SEA
OF SOFTWARE
WE ANNOUNCE...
GET THE PICTURE GET THE PICTURE

The show goes on

***Christina Erskine** talks to Mike Johnston, mastermind behind the ZX Microfairs*

Computer shows are, on the whole, a necessary evil.

Trekking round them is often a wearisome business: hard on the pocket, hard on the eyes (all that fluorescent light and flickering screens) and hard on the feet (you can guarantee the stands you're really interested in are at opposite ends of the exhibition hall – or halls).

Absolutely none of the above applies to ZX Microfairs.

They are small, noisy, enthusiastic affairs where the stands are tables pushed together and the atmosphere is friendly rather than frenetic.

They are about the one place where the hobbyist can meet hordes of other hobbyists, and then join up with the hobbyists *behind* the stands.

The ZX Microfair attendance is remarkably loyal. At the last fair in February, 6,000 people trudged and skidded up the hill to Alexandra Pavilion in six inches of snow.

The ZX Microfair is a home micro institution. Few exhibition organisers would contemplate holding one show four times a year, but that is what Mike Johnston has been doing since 1981 – the 16th ZX Microfair is scheduled for this weekend.

Mike Johnston manages to combine organising Microfairs with a full-time job as a civil servant. A bulky exuberant extrovert, he seems unperturbed by rumours of problems at Sinclair.

"Of course the Microfairs are dependent on Sinclair to a large extent," Mike said. "When we started, Sinclair comprised 100% of the British computer industry. Now it represents 40%, but the Microfairs are still going strong."

"I've often thought it would have been a good idea to expand it to include other machines," mused Mike. "Obviously one would want to go for the other popular machines, and include maybe Commodore, maybe Amstrad. Possibly, there's still time to do that, if need be though it would be a large risk in terms of money.

"Certainly, the whole thing is driven by hardware from Sinclair, which hasn't produced a *new* machine since the QL, and that has sold slower than expected."

So is Mike looking forward to the portable Pandora which Sir Clive has promised?

"To be quite honest, I was hoping for a portable when the Spectrum came out. Think of all the electricity it would have saved at the fairs."

He considered the matter some more. "I think the long-term prospects for computing, and home computing, are very good.

"But it's still incredibly unpredictable. For a long time, home computing was seen as a hobby, a crank interest. Then the games market suddenly took off and I don't think anyone, not even Sinclair, guessed that it would.

"That side of things now is being consolidated, but people seem to forget that computers are multi-purpose machines, and there's a huge potential for growth on the communications front. At the moment, though, networkers have the same problems as the first telephone users – who can they talk to?"

Undoubtedly part of the Microfairs' success is the individual consideration Mike gives to all prospective exhibitors. "I'm generally more interested in the products people will be showing than raking in their fees – occasionally I've taken some companies with something interesting to display even if they couldn't afford it. Some of them have gone on to do quite well.

"Kempston, for instance. Back in the early days its boss, Ab Pandaal, was extremely dubious when I tried to sell him the joys of the ZX Microfair. Eventually he took half a table – a special concession – and since then Kempston has gone from strength to strength."

Sadly, however, the Microfair has had to leave Alexandra Pavilion in north London, which, for many, had become synonymous with ZX Microfairs. This weekend, the fair is to be held at the New Horticultural Hall near Victoria station. "It was either move or put the prices up, and I certainly didn't want to put the prices up – the minimum sized stand is £85.

We started off the fairs in the Central Hall in London, which is eight times smaller than Ally Pally, so it was by no means a permanent home."

What the move does mean is that the opening illustration of Delta 4's *Return of the Holy Joystick* – showing the bus stop halfway up the hill in Alexandra Park – has almost become a nostalgia item. The ZX Microfair is able to boast appearances in two adventures (*Return*, and its predecessor, *Quest for the Holy Joystick*) and not even the giant American Consumer Electronics Show has managed that.

"The Microfair has actually changed enormously since it started," said Mike. "There are very few exhibitors now who were there at the beginning. DK'Tronics has been at every one, except, ironically enough, this coming one, Kempston has been coming since the second one, Bernard Babani books have taken stands for ages, and Sunshine Publications (*who they? Ed*) have been there almost from the year dot.

"But with most of our first show exhibitors, it's a where-are-they-now situation."

One should not be beguiled into thinking that the ZX Microfair has risen smoothly from strength to strength throughout its history. There was, after all, the Manchester ZX Microfair.

"Oh Lord, don't, whatever you do, mention the show in Manchester. Not that it was Manchester's fault, but the Pope came over to Manchester that weekend, and I think his visit proved a slightly greater attraction."

Like any hobby there are the real enthusiasts and those who like to take their pastime in a more relaxed fashion. What Mike calls the division between the 'hot-rodders' and those who view their micro like a TV or a hi-fi.

It is to the first group that the Microfairs appeal.

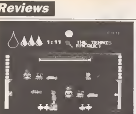


They are a unique meeting place and the latest software and peripherals for Sinclair micros are often previewed or play-tested there.

"Someone once told me the fairs were like motorbike shows – full of enthusiasts who'll come through hall and high water to see the latest flashy bolt-on bits for their micro."

On the evidence of the shows themselves one is forced to agree. A maelstrom of pushing bodies confined in a space that isn't ever quite big enough – craning to see who knows what.

They're a dedicated bunch – enough to ensure that ZX Fairs will just keep on coming. Like some never-ending micro circus.



Lost & Found

Program *Herbert's Dummy Run* **Price** £5 95 **Micro** Spectrum **Supplier** Mikro Gen, 44 The Broadway, Bracknell, Berks

The many fans of the exploits of Wally Week will not be disappointed by this latest offering since it reproduces the old formula exactly The graphics have been refused to even greater heights than before, containing the very fine detail seen in *Everyone's a Wally* but set in a huge variety of rooms in a department store separated by stairs and a lift, as in *Pyjamarama*.

The objective of the game is to play the part of Wally's son Herbert who is looking for his parents in the lost and found department Again success requires discovering the logic behind the use of the various objects that are lying around. The multi character idea which was such a major part of *Everyone's A Wally* seems to have been dropped, and on reflection I think I'm glad, so completing the game should be easier – if you can survive the arcade sections As well as the statutory monsters floating around, there are at least three rooms that parody old arcade games – *Frogger*, *Breakout* and *Invaders* and the purpose of these is even more obscure than the similar rooms in *Pyjamarama* or *Wally*.

I'm sure that saying much more will be preaching to the converted, unless you are one of those that cannot close their mind to the inevitable attribute clashing and are sent reeling from the TV with a triple strength migraine. Incidentally my favourite room is completely dark except for lots of devilish looking eyes and Herbert's little peepers peering out of the gloom. Great fun

Tony Kendle

Extended

Program *QL Pascal* **Price** £89 95 **Micro** QL **Supplier** Metacomco, 25 Portland Square, Bristol BS2 8RZ.

Due to the QL's 32-bit processor and the amount of available memory a wide range of language compilers have been produced Metacomco in particular has produced a number of languages, the latest of which is Pascal.

As well as the compiler, Metacomco's standard editor and linker are supplied, these are held on two microdrive tapes. A 16K Eprom cartridge holds a number of the routines needed by the compiler and is designed to stop people making copies of the program and selling them The advantage to the user of such a system is a lower selling price due to increased sales and a faster compiling time as fewer overlays are needed To go with the package there is a 80 page A4 reference guide which gives information on each of the supplied programs and the specifications of the compiler

The language is a full implementation of the ISO standard and so should be compatible with versions of Pascal found on much larger computer systems There are also a number of extensions to the language which give control of the screen and other QDOS traps These, of course, will not be found on other computers

The compiler outputs a machine code file which is then merged with the run-time code by the linker The linker may also be used to merge external procedures produced by Metacomco's Pascal, BCLP or their assembler, into the code file The final code may then be run by the user of the Basic *'Exec'* or *'Exec W'* commands.

The main advantage of Pascal over Basic is the speed at which programs run Speeds greater than 100 times faster than Basic are not uncommon. Such increases though may drop down to only three to 10 times faster if QDOS routines for the screen and floating point numbers are used a lot On average, though, the speed increase will be about 20 to 40 times that of Basic.

The disadvantages of using Pascal are that the run-time code block is about 20K long without the program so there will be little memory space left on a basic QL and the free space on the microdrives becomes full very quickly These problems may be overcome by buying extra Ram and a disc drive, even a third microdrive would improve the speed at which the system worked

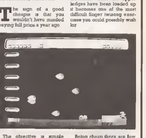
The packages' price may seem high, but such a version on any other computer would cost far more than £89 95

Roger Thomas

Difficult

Program *Hellchopper* **Price** £2 50 **Micro** Spectrum **Supplier** Firebird, Wellington House, Upper St Martin's Lane, London, WC2H 9DL

The sign of a good cheapie is that you wouldn't have minded paying full price a year ago



The objective is simple enough to get you into the game quickly You collect little men from the bottom right of the screen in your helicopter (helichopper?) and fly them to safety on ledges on the left of the screen. Of course, to complicate things the middle of the screen is full of a whole seething mass of floating, crawling, blipping, rock throwing monsters. There are 23 screens to complete and you are hampered by the fact that you can only fire downwards whilst the creatures fill the screen in all directions Once the upper ledges have been loaded up it becomes one of the most difficult finger twisting exercises you could possibly wish for

Being cheap there are few frills, but the graphics are large smooth and well drawn, the only exception being the chopper itself which flickers so alarmingly I wondered how the little men had the nerve to get in it

Tony Kendle

Superstar

Program *Roland's Rat Race* **Price** £7 90 **Micro** Commodore 64 **Supplier** Ocean Software, Ocean House, 6 Central Street, Manchester M2

Roland Rat, the world-famous rodent superstar, seems to be getting everywhere Not only is he on television and in the pop charts, but now he's even made it onto the C64

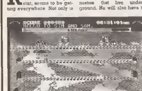
The game starts with Roland in a bit of a fix As a superstar on breakfast TV, he has to make his way to the studio in time for the show every morning. Unfortunately, on this particular morning, his car won't start and it will soon be time for the show Being a city rat, Roland knows his way around London below ground, so he decides to venture beneath the manhole covers to get to work before 9 00am This is where you come in.

You have to guide Roland through the maze of drains and tunnels One of the tunnels is blocked by a large door If Roland is ever going to leave the underground network, he will have to find the pieces to the door and the key

Roland has only his instant stic-o-matic glue gun to protect him from the various nasties that live underground. He will also have to find food to keep his energy level up

The graphics for the game are very well done – the layout of the drains and tunnels is particularly good I especially like the train which runs along the bottom of the tunnel network If Roland's quick, he can stop the train and catch it to some other location Come to think of it, the sound's not bad, either A great game for Rat fans everywhere Her-her-her

Tom Hussey



Effective

Program *APL* **Price** £95 95 **Micro** QL **Supplier** Micro APL, Nine Elms Industrial Estate, London SW8

This implementation of 'APL' is produced by London – based MicroAPL. it has a strong background in implementing business and technical user 68000 systems APL is a curious language better explained by illustration.

'*' # box 'Jan Feb Mar *123' <enter> gives

JAN FEB MAR
1 2 3 and:
x is 18 <enter>
y is 3 1985 <enter> gives
18 3 1985 (note the numbers are formatted together by the system

The idea of APL is that the language is intuitively 'obvious' in exactly this fashion right up to the level of very advanced mathematics or for the length of a session to review the financial position of a major company Users should find that they can express their requirements to the machine in what is effectively a conversation – the naming and function capabilities are so good that quite often simply naming a few variables, setting the values and without further ado typing the functions required, will allow easy completion of a programming task which could be impractical in any other style

This implementation of APL on the QL is a particularly effective one It is very thoroughly documented, with a good introductory course for beginners as part of the manual, and references for further development Anyone who knows the symbolic version should not have problems with the keyword version, nor vice versa.

The money requirements give a 29K work space on the standard machine. This is quite enough to develop a good capability with the language, but with 256K or 512K it becomes really useful Microdrives proved completely adequate for storage, although discs would allow transfer to other machines, but programs can be uploaded from serial links.

The IQLUG is supporting known users of the system, there will be a library in the same way as for other languages

The combination of a much more comprehensive version of APL than can be written for any CP/M system (8080vs68000) and the graphics resolution of the QL make the combination a tool which before 1985 would have cost nearer £5000 It is therefore amazing value

Donald Forbes

At peace

Program *Elite* **Micro** Commodore 64 **Price** £? ??**Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL.

Elite was the biggest selling BBC/Electron game of 1984 Now *Elite* has appeared on the Commodore 64

Our version came on disc, and loaded in the amazing time of 30 seconds Yes, that's right, half a minute on a Commodore disc drive.

Once you've loaded, things look much the same as on the BBC *Elite* – but then, you are still docked in the space station One difference lies in the save commander routine – access this, and you get a neat little menu which allows you to toggle between disc and cassette storing, to default to Commander Jameson.

Trading and equipping the ship is just as in the BBC *Elite*, as indeed are most things – interplanetary flight, intergalactic flight and combat.

Once launched, however, you notice an immediate difference – glorious technicolour Well, four colours on the vision screens, and eight on the displays Everything is to be much clearer

The line graphics do appear to be rather slower than on the BBC when there are a large number of objects on screen – but who cares? If there's that many, they're bound to be Thargoids, in which case you're probably dead already

There are various extra touches One new command allows you to turn off the lines which indicate polar ice caps on planets – this speeds the game up. Another option allows you to have music playing – but only if you have a docking computer

The docking computer, by the way, is one of the biggest differences about C64 *Elite* – on the BBC, once you were within range of the space station orbiting your target world, all you had to do was press C and Zowie you found yourself safely docked. With the Commodore, press C and an auto pilot takes over It's good but very, very slow

You can press C the moment you emerge from the voids of hyperspace, which means that the computer takes over planetary approach and everything Of course, you wouldn't be advised to go to sleep, or make a cup of coffee – the computer only pilots the ship, it doesn't take over fighting as well.

But if you feel at peace with the universe then hit the C key, lean back, and watch space go by to the strains of the Blue Danube

Martin Croft

Reviews

Yieeeee!

Program *The Way of the Exploding Fist* **Price** £9.95 **Micro** Commodore 64 **Supplier** Melbourne House, Castle Yard, Richmond TW10 6TF



Melbourne House's latest release is a blockbuster lo all senses ol the word (just take a look at the packaging artwork if you don't get the joke)

I suppose the best word for it would be a sports simulation – but the sport is karate. You have to control your animated sprite on screan as he (all the sprites you see are very definitely masculine, I'm afraid) tries to take out his opponent

You bave a wide choice of tactics – you can opt for simple kicks and punches, or you can try tricker moves like drop kicks, roundhouses, or sweeps You can move forwards or backwards, or somersault in either direction.

The game can be played either one or two player. If one player then the computer controls your opponent. If two player, you and a friend can safely beat each others' brains out.

The scoring is a bit confusing at first, but you soon get used to it. Basically, there are two esparate systems To win a bout against the computer, you need to get two complete yin yang symbols – you get a full circle if you execute a move perfectly, but only a half if you don't get it completely right. You are really being marked for style

You also score points – ranging from 1,000 for a perfectly executed dropkick or roundhouse, to a mere 200 for a stylish straight punch

You also get extra points depending on how long it took you to beat your computerised opponent – you have a time limit of 30 seconds, and for every second remaining at the finish of a bout you score 100 points (assuming you won)

In the two player game, you are only scoring points – you have four 30 second bouts, and the person with the highest score at the end wins There are no bonus points

In the one player game, however, you fight two bouts at each level of skill – you begin facing a novice, then progress up through the levels or dans Each succeeding enemy is harder to beat Because he will be able to use a wider range of manoeuvres

The graphics are just right – your character responds very well to the joystick, bouncing abot the screens like Bruce lee himself. The sound is great, too – but watch out for the loading scream on the disc version!

All in all, addictive – and you'll soon find yourself wincing as your on screen alter ego is locked in the teeth, or punched in the groin. In fact, after about five minutes' play, you'll probably begin doubling up in sympathy, dodging

Martin Croft

Can it, Janet

Program *The Rocky Horror Show* **Price** £8.95 **Micro** Spectrum 48K **Supplier** CRL Group PLC, CRL House 9 Kings Yard, Carpenters Road, London E15 2HD

Welcome. Well come on over to the Frankenstein place where the Master will strip you of your inhibitions and probably your clothes as well Yes, this is more *Frankie Goes to Hell* than Hollywood and don t you wish innocents like yourselves, Brad and Janet, could escape? Unluckily for you Frank N Furter has turned one of you to stone with his Medusa ray, so your opposite number will have to reassemble the De-Medusa bits of which are scattered around the ancestral pile But nothing is what it seems and the 'castle' is really a cunningly disguised spaceship about to blast off back to the planet Transexual in the Galaxy of Transylvania, and you wouldn't want to be still on board when it did that, would you?

The mansion is an accurate reproduction of the film's sets and its inhabitants from blond biceped Rocky to biker Eddie, an earlier attempt at 'body-building', are easily recognisable and behave in character, even speaking lines that every *Rocky* fan will know by heart While some people have complained that the game is unplayable using the keyboard I found it enjoyable and addictive, though perhaps too quickly solved

The audience participation of *Rocky Horror* cultists is famous Now with this program they can take the ultimate step in becoming part of the action Four stars ... or five if played while wearing stockings and a corset!

John Minson



Budget chaos

Program *Don't Panic* **Price** £2.50 **Micro** Spectrum 16K **Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL

The initial releases from Firebird indicated that Bargain Price need not mean Badly Programmed. chart-topper *Booty*, for instance However, the fact that *Don't Panic* runs in 16K is hardly reassuring

Here's the plot. Stranded on one of those strange arcade game planets, consisting of four levels linked by lifts, you have to load a cargo of what look like cuddly toys into your spaceship Problem number one – the toys are radioactive so have to be blasted with a decontamination gun that also propels them towards the edge of a shaft and into the ship's hold Second problem – a wandering alien who s both invincible and in hot pursuit!

First reactions were that this game is as dull as the planet's landscape, but no! Further playing revealed subtleties While you can ascend/descend any number of levels the alien can only move at a time, but as it's not always on screen you have to carefully judge where it is and lure it away from where you want to be. In addition the rocket ascends one platform at a time during filling, so the lower levels have to be cleared first, however inconvenient. Simple but devious fun.

John Minson


PALACE SOFTWARE PROUDLY PRESENTS
CAULDRON
Spectrum version available now
FREE GAME
Cassette includes previously unreleased Spectrum version of
THE EVIL DEAD

Jack of all trades

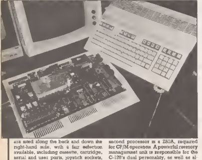
***Jeff Naylor** previews Commodore's new C-128K twin-processor machine and finds it less unwieldy than expected*

Commodore have found themselves in a bit of a quandry in the last year attempts to replace the very successful Commodore 64 have failed, while their up-market machines are beyond the reach of the home user in the UK.

The much rumoured C-128 seems at first glance to be so unlikely solution to their problems, but on closer examination it is a very shrewd design. By aiming to be compatible with both the CBM 64 and the CP/M standard, it begins life with a huge base of software. Hidden between the belt and braces, the C-128 also boasts 128K of useful Ram and an excellent Basic

The hardware

The C-128 is about 17 inches wide (430mm) and a considerable 13 inches (324mm) deep. Although it occupies a good deal of desk space, it is only about three inches high, and therefore looks quite compact Input/Output connections



are sited along the back and down the right-hand side, with a fair selection available, including cassette, cartridge, serial and user ports, joystick sockets, and no less than three video outputs – RF for feeding a TV set, composite video for 40 column displays and RGBI to do justice to the 80 column mode

The keyboard consists of two parts. The main qwerty layout contains all the elements of the CBM 64 keyboard, including such features as the dual-direction cursor keys which require two fingers to operate Mechanically, the keys have a better feel and less of a rake. Also part of the CBM 64 arrangement are the four function keys, laid out in a horizontal row at the top left. Electrically, these sections have been designed to react in an identical manner to the CBM 64

Additional keys are scanned separately; four proper cursor keys and eight various control keys live above the main keyboard, and a numerical keypad lives on the right-hand side.

Inside the machine, a large printed circuit board extends right to the back of the casing One reason for the thinness of the C-128 is the provision of an external power supply, which itself is not small, Commodore staff refer to it as 'The Brick' and they are not far wrong

The main microprocessor is an 8502, a 6502 derivative capable of addressing a standard 64K of memory Its most important asset is the ability to behave exactly as the 6510 CPU contained in the CBM 64, contrary to some reports, there is not an additional 6510 inside the C-128 The second processor is a Z80A, required for CP/M operation A powerful memory management unit is responsible for the C-128's dual personality, as well as allowing the bank switching needed to make full use of the 128K of Ram and variety of Roms

Sound facilities are provided by the 6581 Sid chip as contained in the CBM 64, with the output fed to the TV or monitor Video generation is carried out by two completely independent signal chains The 40-column display is produced in the same manner as the 64 Ram from the main memory map is used to give a 40*25 character text display in 16 colours, or to give the other hi-res modes available on the 64 Up to 16 sprites can be superimposed. This display is routed to the TV and composite ports. The 80-column screen display chip has its own 16K of Ram, and there are two possible modes of operation. Text gives an 80*25 character display that uses 2K for text, 2K of colour attributes and some of the remaining Ram for shape tables No sprites are available, but 16 colours can be shown at the same time The bit-map mode of the 80-column screen uses the whole of the 16K Ram available to give 640*200 pixels in a choice of two colours Apparently, the 80-column video chip would be capable of producing more colours if it had extra Ram at its disposal.

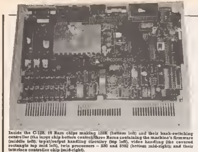
As the 80-column screen is output via the RGBI port and has its own Ram, the C-128 can, with two monitors attached, provide two screen displays simultaneously This need not be just a gimmick – it may be useful during program development, for example One point to note about the 80-column display is the need for an RGBI (Red, Green, Blue and Intensity) monitor, without the intensity signal, only eight colours would be reproduced Commodore will be marketing its own monitor, the 1902, that will display all the C-128 video signals.

Other hardware features of the C-128 include a clock, available in the CP/M mode but not integrated into C-128 Basic The memory management can recognise two further 64K banks of Ram although Commodore have no plans to use the space They will be providing an additional Ram board that will give extra storage In CP/M mode it will act like a Ram disc.

An almost indispensible companion to the C-128 will be the new Commodore 1571 disc drive This is an intelligent device with its own CPU, Ram and 32K of Rom containing a built-in Dos The drive takes 5¼ inch discs and can read and write in a variety of formats. It will behave exactly like the CBM 64's standard drive (1541), working just as slowly and storing up to 340K in a single density format If used in conjunction with a C-128 the transfer rates improve dramatically Under software control, CP/M discs of most formats can be handled. Maximum capacity is 410K.

C-128 mode

Native C-128 operation brings into play 48K of Rom containing kernal routines and Basic 7 0 This makes full use of the Ram available by using one 64K bank for programs and the other for variables On power-up it proclaims 122K bytes free for use The Ram for the 40-column display is taken from the Basic program bank, so using hi-res graphics will eat



Inside the C-128. 16 Ram chips making 128K (bottom left) and their bank-switching controller (the large chip bottom centre), three Roms containing the machine's firmware (middle left), input/output handling circuitry (top left), video handling (the covered rectangle top mid left), twin processors – Z80 and 8502 (bottom mid-right); and their interface controller chip (mid-right).

into this. You must bear in mind that a Basic program which fills its bank of Ram will produce an out of memory error, however many bytes are free in the variables bank

The user determines which screen display is used by operating a latching switch on the keyboard before a reset. Once in 80-column mode it is still possible to print to the 40-column screen (and vice versa) with the aid of control characters

Critics of earlier Commodore Basics will find version 7 0 a pleasant surprise, with many friendly functions to replace the vast number of *Peeks*, *Pokes* and *Sys* commands required to achieve much on the CBM 64 Using the 80-column bit-mapped mode is not going to be easy, however. No commands at all exist for this mode – it seems that Commodore were unsure if it was actually going to work until quite recently, so Basic is unaware of its existence

One interesting command is *Bank*. This allows the Basic programmer to determine which sections of Rom, Ram and I/O respond to commands such as *Peek*, *Poke* and *Sys* (for the information of non-Commodore people, this last is a command for calling machine-code routines). It is therefore very simple to employ the second Ram bank as a store for machine code programs or data. In common with the Plus-4, the C-128 has an integral machine-code monitor, with the added facility that it is also able to switch banks

You may be wondering why a different CPU is employed in the C-128, one reason is a Basic command Fast. This doubles the clock speed so that the 8502 operates at 2MHz Readers with long memories may remember the *Poke* that can be performed on a Dragon to get its 6809 CPU to operate at double speed (it didn't always work) The 8502 offers much the same hardware feature, and the C-128 will always cope

If the purchase of a C-128 leaves you unable to afford the new disc drive, then you can use the old 1541 model or even a C2N datacorder, but these will only work at the same speed as they do on the CBM 64 It remains to be seen if software written in C-128 format will be available for downloading in either of these ways – any program that utilises the memory capacity of the C-128 is going to be very boring to load from cassette!

CBM 64 compatibility

Enter the command *Go64*, and the memory management unit transforms the C-128 into what Commodore claims to be a 100% compatible version of the CBM64 The claim is quite plausible a 16K Rom is switched into operation which contains the CBM 64 firmware, and there is no reason why this should not contain exact duplicates of the CBM 64's kernal and Basic routines, warts and all. It is possible that illegal I/O operations may cause hiccups Also, some games software might use protection systems involving undocumented instructions on the 6510 processor to which the 8502 reacts differently

To put these possibilities in perspective, Commodore has yet to find any Rom or disc software that crashes. In addition to being software compatible, any CBM 64 peripheral that you own should also work on a C-128

CP/M mode

If you purchase a 1571 disc drive for the C-128, it will come complete with CP/M system disc When this is inserted into the drive and a reset performed, the computer will automatically load-up CP/M Plus version 3 0 The Z80A CPU is given control of the busses and the C-128 becomes a fully fledged business machine Not very practical, but worth noting, is the fact that the 40-column display can act as a window and be scrolled sideways to view all 80 columns CP/M Plus is designed to take advantage of computers with more than 64K of Ram, so again the second bank of the C-128's memory can be employed CP/M also takes advantage of the time clock available from the C-128's hardware A number of command files will be provided on the system disc for tasks such as making back-up discs, copying files (PIP) and investigating discs (STAT), however, some of the less popular Digital Research utilities will be omitted (for example the ASM and DDT assembler and debugger, both of which only handle 8080 operations)

With its hardware specification, advanced disc drive, and up-to-date version of CP/M, the C-128 should handle virtually any CP/M program. Commodore cite *WordStar* and *dBase II* as examples

Price and availability

Commodore will make an official announcement on the subject of when and for how much C-128s will apear on the shelves While a dozen or so machines are rumoured to be in the hands of software companies, the launch does not seem very imminent – late summer was the closest I could get to an estimate Commodore will undoubtedly try to have the computer ready for Christmas Prices are also not yet fixed, with Commodore staff muttering figures around £300-£350 for the computer and about the same again for the 1571 disc drive

Conclusion

The C-128 is great news for existing CBM 64 owners. It offers an upgrade into business computing without making their peripherals, software and know-how redundant Whether it will attract new home users, though, is questionable If Commodore provide sufficient C-128 software, or can find a way of lowering the cost of CP/M programs, then it could be a huge success

The question marks which remain are mainly those of price At around £700 for the C-128 and 1571 disc drive combination, it starts to look pricey alongside the Apricots FIE and Apple II models

Atari's 520ST could be only £200 more expensive for a 512K 16-bit machine with bundled monitor

But as a piece of hardware, the C-128 is an elegant solution to the compatibility problem It may even halt the invasion of 16-bit computers for some time, although not for ever

Endgame

A sophisticated machine code strategy game for the Spectrum from *M Tomlin*

One of the most popular games implemented on a computer is chess. Many admirable chess programs exist on the market but none are even a close match for a good inventive human opponent.

The reason being that most currently available chess programs do not teach the basics of the game very well. *Endgame* was written not only to be a game in its own right, but also to help teach the elements of pawn-play and how to handle the time that you have to think about a game.

Rules: Both sides start with an army of pawns set up as in chess, the board being devoid of all other pieces.

Pawns move in the usual way, one square forward at a time taking opposing forces one square diagonally forward. Both en-passant and double first moves are allowed.

The object of the game is to get one of your pawns to the other side before the clock has counted down to zero.

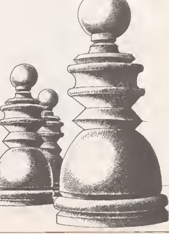
Options: On loading there will be an option panel displayed. Pressing '1' will take you into a new game whereupon you will be asked for the level required. Pressing '2' will take you into analysis mode where pieces can be placed and removed to set the board up in any position. You set up the board by first entering the coordinates of the square you wish to alter and then pressing either 'b' for a black pawn, 'w' for a white one or '0' for an empty square. Taking the *Init* option in analysis mode will set the pieces back to their starting positions and *Clear* does the obvious task of clearing the board entirely. The *Exit* option will take you into the game proper with the board as set up. You may resign from a game by pressing 'r' but only when it is your turn to move. You can also change the orientation of the board by pressing 'o', this is handy if you see a winning line for the computer and fancy your chances at playing it.

To enter moves during the game use normal chess notation (algebraic) ie, e2-e4 moves what would normally be the king's pawn two squares forward. Just press the numbers and letters: there is no need to press *Enter* afterwards.

Tape & Microdrive Options: To save the current board position to either tape or microdrive press *Caps/Shift* and 'T' or 'M' respectively when it is your turn to move. To load a position back press the corresponding key displayed in the option panel before a game starts. Loading position will put you into analysis mode.

NOTE: When using microdrive routines use drive one and make sure there is a cartridge in it before saving/loading. Causing an error will not crash the machine but it will prevent you from saving/loading positions until the game is reloaded. Only one board position can be stored on each cartridge. When saving a position for the first time the process may take a while as the program is searching for an old position to erase.

To get the game up and running first type in Listing 1 and save it with either *Save "ENDGAME" Line 1* or *Save*"m",1,"Endgame" Line 1* and reset the machine. Then type in the hexloader in Listing 2 and enter the hex codes given in Listing 3 reading from left to right. A good way of entering hex numbers is to first speak them into the cassette recorder and then play the tape back, typing the numbers as you listen. That done save the code with *Save "encode" Code 25800,3143* or its microdrive equivalent.



LISTING 1

```
1 CLEAR 25499
2 PAPER 1: INK 1: BORDER 1: CLS
3 LOAD "andcode" CODE
        or
3 LOAD *"m",1,"andcode" CODE
4 RUN USR 25500
```

LISTING 2

```
1 CLEAR 25499: LET D=25500
2 DEF FN A(A$,B)= CODE A$(B) -48
-7*( CODE A$(B) >57)
3 DEF FN C(A$)=16* FN A(A$,1)+
FN A(A$,2)
4 INPUT A$: POKE D, FN C(A$): LET
D=D+1: GOTO 4
```

LISTING 3

[illegible]

Coded message

Send an SOS to your friends with this Morse trainer for the BBC

This program has been designed to help teach or revise Morse code. The exercises used in the program were devised by a student of seamanship, and provide an effective way of learning Morse.

Instead of learning it from a book, you can get the computer to test you by "transmitting" letters in their dot/dash sound format. As you become more proficient in Morse, so the time in which you have to answer questions decreases, and Morse transmitted by the computer will speed up – until, in fact, it is the speed of an experienced Morse operator.

At the end of each test the computer will give you a rating – from "No comment!" to "Amazing!" – so that you can see how well you are doing.

As well as testing yourself, you can learn Morse code by choosing option 1 on the menu, which will take you through the alphabet and numbers, printing out their codes and with the appropriate sounds. You can return to the menu at any point in the program by pressing *Escape*.

The underline sign in the listing, used to represent the dashes, is actually the line under the pound note symbol on the BBC's keyboard.

```
   10 REM                    MORSE CODER
   20 REM           (C) Jonathan Temple
   30 MODE 7
   40 ON ERROR IF ERR=17 GOTO 70 ELSE 17
10
   50 *FX 202,32
   60 PROCinit
   70 REPEAT
   80 PROCmenu
   90 IF option=1 PROCcodes ELSE IF opti
on<5 PROCtest
  100 UNTIL option=5
  110 :
  120 CLS
  130 PRINT''"END OF PROGRAM"
  140 PRINT  "______________"
  150 END
  160 :
  170 DEFPROCcodes
  180 FOR L%=1 TO 36
  190 PRINTTAB(8,5);c$;"The code for";y$
;char$(L%);c$;"is";y$;code$(L%)
  200 PROCsound(code$(L%))
  210 PRINTTAB(5,9);c$;"Press";y$;"SPACE
 BAR";c$;"to continue"
  220 REPEAT UNTIL ADVAL(-6)=15
  230 REPEAT UNTIL GET=32
  240 CLS
  250 NEXT
  260 ENDPROC
  270 :
  280 DEFPROCtest
  290 num=option-1
  300 vision=FALSE
  310 sound=FALSE
  320 IF option<>3 vision=TRUE
  330 IF option>2 sound=TRUE
  340 PRINT''';c$;"Type in the letter or
 number for each"'c$;"Morse code. If you
r answer is correct,"'c$;"you will have
to give your next answer"'c$;"within a s
horter time limit."
  350 FOR L%=1 TO 20
  360 PRINTTAB(0,10);STRING$(40," ")
  370 R%=RND(36)
  380 PRINTTAB(0,10)c$;"Enter the letter
/number: ";y$;
  390 IF vision PRINT code$(R%);c$;
  400 IF sound PROCsound(code$(R%))
  410 REPEAT UNTIL ADVAL(-6)=15
  420 key=INKEY(speed(num))
  430 IF key<>-1 VDU key:FOR pause=1 TO
1000:NEXT
  440 IF key=ASC(char$(R%)) PROCright EL
SE PROCwrong
  450 speed=(1000-(speed(num)))/10
  460 IF speed>=45 length=4
  470 IF speed>=60 length=3
  480 IF speed>=75 length=2
  490 IF speed>=90 length=1
  500 NEXT
  510 PROCresults(speed(num))
  520 ENDPROC
  530 :
  540 DEFPROCright
  550 speed(num)=speed(num)-50
  560 ENDPROC
  570 :
  580 DEFPROCwrong
  590 IF key=-1 PRINTTAB(0,12);c$;"Too s
low!":GOTO 610
  600 PRINTTAB(0,12);c$;"WRONG!";y$;code
$(R%);c$;"is the morse code for";y$;char
$(R%)
  610 PRINT c$;"Press";y$;"SPACE BAR";c$
;"to continue"
  620 REPEAT UNTIL GET=32
  630 PRINTTAB(0,12) STRING$(80," ")
  640 speed(num)=speed(num)+100
  650 ENDPROC
  660 :
  670 DEFPROCresults(speed)
  680 score=(1000-speed)/10
  690 IF score<0 score=0
  700 PRINTTAB(0,14)c$;"Your score for t
his test is";y$;score'c$;"out of";y$;"10
0"
  710 PROCratings
  720 PRINT''c$;"Press";y$;"SPACE BAR";c
$;"to continue"
  730 REPEAT UNTIL GET=32
  740 ENDPROC
  750 :
  760 DEFPROCratings
  770 R%=0
  780 REPEAT
  790 R%=R%+1
  800 UNTIL score>=rating(R%)
  810 PRINT 'c$;"Your rating is";y$;rati
ng$(R%)
  820 ENDPROC
  830 :
  840 DEFPROCmenu
  850 CLS
  860 PRINTTAB(12,1);d$;r$;"MORSE CODE"
  870 PRINTTAB(12,2);d$;y$;"MORSE CODE"
  880 PRINT'';c$;"1 - Alphabet and numbe
rs"
  890 PRINT' ;c$;"2 - Test with vision"
  900 PRINT' ;c$;"3 - Test with sound"
  910 PRINT' ;c$;"4 - Test with sound an
d vision"
  920 PRINT' ;c$;"5 - Exit program"
  930 PRINT'';y$;"Enter option (1-5) ?";
  940 REPEAT
  950 option=GET-48
  960 UNTIL option>0 AND option<6
  970 CLS
  980 ENDPROC
  990 :
 1000 DEFPROCsound(code$)
 1010 FOR L=1 TO LEN(code$)
```

```
1020 IF MID$(code$,L,1)="." SOUND 1,-10
,81,length ELSE SOUND 1,-10,81,length*4
1030 SOUND 1,0,0,length
1040 NEXT
1050 ENDPROC
1060 :
1070 DEFPROCinit
1080 VDU 23;10,32;0;0;0;
1090 DIM speed(3),char$(36),code$(36),r
ating(7),rating$(7)
1100 FOR L%=1 TO 3
1110 speed(L%)=1000
1120 NEXT
1130 FOR L%=1 TO 36
1140 READ char$(L%),code$(L%)
1150 NEXT
1160 FOR L%=1 TO 7
1170 READ rating(L%),rating$(L%)
1180 NEXT
1190 r$=CHR$129
1200 y$=CHR$131
1210 c$=CHR$154
1220 d$=CHR$141
1230 length=5
1240 ENDPROC
1250 :
1260 DATA "A","._"
1270 DATA "B","_..."
1280 DATA "C","_._."
1290 DATA "D","_.."
1300 DATA "E","."
1310 DATA "F",".._."
1320 DATA "G","__."
1330 DATA "H","...."
1340 DATA "I",".."
1350 DATA "J",".___"
1360 DATA "K","_._"
1370 DATA "L","._.."
1380 DATA "M","__"
1390 DATA "N","_."
1400 DATA "O","___"
1410 DATA "P",".__."
1420 DATA "Q","__._"
1430 DATA "R","._."
1440 DATA "S","..."
1450 DATA "T","_"
1460 DATA "U",".._"
1470 DATA "V","..._"
1480 DATA "W",".__"
1490 DATA "X","_.._"
1500 DATA "Y","_.__"
1510 DATA "Z","__.."
1520 DATA "1",".____"
1530 DATA "2","..___"
1540 DATA "3","...__"
1550 DATA "4","...._"
1560 DATA "5","....."
1570 DATA "6","_...."
1580 DATA "7","__..."
1590 DATA "8","___.."
1600 DATA "9","____."
1610 DATA "0","_____"
1630 DATA 90,"Amazing!"
1640 DATA 75,"Excellent"
1650 DATA 60,"Very Good"
1660 DATA 45,"Good"
1670 DATA 30,"Fair"
1680 DATA 15,"Poor"
1690 DATA  0,"No comment!"
1710 CLS:*FX 4,0
1720 PRINT' :REPORT:VDU 10,152
1730 E$="L."+STR$(ERL)+CHR$(13)
1740 FOR L%=1 TO LEN(E$)
1750 A%=&8A:X%=&0:Y%=ASC(MID$(E$,L%))
1760 CALL &FFF4:NEXT
1770 END
```

All sorted out

***R Halsall** presents modifications to Peter Patton's Data File program to give it a sort routine and print formatter*

Microprofile written by Peter Patton (*PCW*, Volume 3, issues 46-47) is a remarkably useful data file for which I have found several applications

When I acquired a printer the need to print out selected fields from previously sorted records soon arose and this entailed the addition of two routines – one to sort the records and one to organise the format of the printout.

Sorting the records

As I wanted to keep things simple I decided to sort on one field only. The sort procedure chosen is the 'bubble' sort which is easy to implement. This entails comparing element n of the array dat(x,y) (where y is the selected field) with element n+1 and either swapping n with n+1 if n > n+1 or leaving the order unchanged

This is repeated until a complete pass is made with no changes. Lines 6000-6110 of the listing carry out this task. Line numbers less than 6000 are in the original program.

6000 Displays the field numbers and names and asks for the field number to sort by. The sub-routine calls are to sub-routines in the original program.

6010 Tests the entered field number for validity

6020 Initialises the flag that is set to '1' if a swap takes place

6030-6060 Tests element x of array dat(x,y) and calls the swap routine at 6500 if dat(x,y) > dat(x+1,y). The variable 'j' holds the number of records in the file

6060 The flag is tested to see if a swap has been made. If the flag is '0' the sort routine is exited.

6070-6110 This routine swaps element n with element n+1. The flag is set in this routine before exit

The printout

Each of my data files have different field parameters (ie, the number of fields and number of characters per field). I wanted to be able to set up a format on A4 pages with left and right hand margins of five characters (leaving 70 characters to play with). As records wrapped over two or more lines of print looked messy and made it difficult to identify columns I decided on one line per record. With most of my files this meant that I could not print complete records but only selected fields.

Some of my names are longer than the field they describe so, as I wanted to make best use of the available line length, I decided to simply number the columns and to add a reference table to the top of the printout together with the name of the source file

Finally, as I wanted to head each new page with these column numbers, I arranged for the routine to keep a count of the number of lines printed in order to drive to a new page when the set page length is exceeded. Lines 6120-6550 deal with all of this

6120-6240 The field list is displayed, the prompt asks for the field number(s) to be entered. These are held in the array column()

Listing 1

```
6000 GOSUB 1700:LOCATE 25,23 :PRINT "Sort by which field no ? ";:
1=2:GOSUB 2150:h=VAL(m)
6010 IF h<1 OR h>y THEN PRINT CHR$(7):GOTO 6000
6020 flag2=0
6030 FOR x=1 TO j-1
6040 IF dat(x,h)<=dat(x+1,h) THEN 6050 ELSE GOSUB 6070
6050 NEXT
6060 IF flag2=1 THEN 6020 ELSE RETURN
6070 FOR z=1 TO y
6080 dtemp=dat(x+1,z):dat(x+1,z)=dat(x,z):dat(x,z)=dtemp
6090 NEXT
6100 flag2=1
6110 RETURN
6120 '*****SET UP PRINTOUT FORMAT******
6130 REM DISPLAY FIELDS
6140 GOSUB 1700
6150 PRMAX%=70:PRLENGTH%=0:COL=1
6160 s=""
6170 GOSUB 2310:LOCATE 20,23:PRINT"Input field number or E to exi
t ".:1=2.GOSUB 2150:h=VAL(m)
6180 IF H=0 THEN 6250
6190 IF h<1 OR h>y THEN PRINT CHR$(7):GOTO 6170
6200 PRLENGTH%=PRLENGTH%+VAL(RIGHT$(F$(H),2))+1
6210 IF PRLENGTH%>PRMAX% THEN LOCATE 20,23:a= "Line is too long -
 re-enter":GOSUB 2310:GOSUB 2330:PRINT CHR$(7)::FOR X=1 TO 2000:N
EXT::GOTO 6120
6220 COLUMN(COL)=H:COL=COL+1
6230 s=s+STR$(h):GOSUB 2330
6240 GOTO 6170
6250 LOCATE 25,25:INPUT "Enter Page Length :- ",page%
6260 lines%=5
6270 '*****Print file name and column references******
6280 s="Source File :-"+name$:GOSUB 6550:PRINT #8:lines%=lines%+2
6290 GOSUB 6300:GOSUB 6370:GOSUB 6440:RETURN
6300 FOR yyy=1 TO col-1
6310 s="column "+STR$(yyy)+" = "+LEFT$(f$(column(yyy)),10):GOSUB
6550
6320 lines%=lines%+1
6330 NEXT
6340 PRINT #8:PRINT #8:lines%=lines%+2
6350 RETURN
6360 '*****Print column numbers******
6370 PRINT #8, TAB(6);
6380 FOR yyy=1 TO col-1
6390 PRINT #8,STR$(yyy)+STRING$((VAL(RIGHT$(f$(column(yyy)),2))+1
-LEN(STR$(yyy)))," ");
6400 NEXT
6410 PRINT #8:PRINT #8:LINES%=LINES%+2
6420 RETURN
6430 '*****Print Data lines*****
6440 FOR x= 1 TO j
6450 PRINT #8,TAB(6);
6460 FOR yyy=1 TO col-1
6470 PRINT  #8,dat(x,column(yyy))+ STRING$((VAL(RIGHT$(f$(column(
yyy)),2))-LEN(dat(x,column(yyy))))," ")+" ";
6480 NEXT:PRINT #8:lines%=lines%+1 :IF Lines%>page%-5 THEN GOSUB

6490 NEXT
6500 RETURN
6510 '*****Skip perforations*****
6520 lines%=5
6530 PRINT #8,STRING$(10,CHR$(10))::GOSUB 6370
6540 RETURN
6550 PRINT #8,TAB((60-LEN(s))/2);s:RETURN
```

As each field number is entered a check is made on the total line length used – if this exceeds 70, a message is given and the entry procedure is restarted. A display of the selected field numbers is maintained below the prompt line. Enter the field numbers in the order required on the printout – enter '0' when finished.

6250 Asks for the page length to be entered.

6260 Sets the line count to 8. This is where my printer head starts a page relative to the tear-off bar.

6280 Prints the file name – subroutine 6550 centres it.

6290 This calls in turn the subroutines to print the column reference table, the column heading numbers, and the data lines.

6300 's' is the parameter passed to the function which centres text (defined in line 20 of the original program). Here it is set to a string containing the column number (yyy) and the field name from the array f$()

6380-6420 This sub-routine prints the column numbers. It looks complicated because they have to be spaced sufficiently apart to suit the field lengths.

6430-6500 The sub-routine that prints the data lines – be careful when entering line 6470!

6510-6540 Adds five blank lines to the bottom of the page and five to the top of the next one.

Modifications to the original program: These two new options need to be added to the main option menu. Listing 2 shows the four new lines needed to do this and these follow the pattern of the original program.

Finally change line 840 to the new one shown.

Listing 2

```
615 s="(5)     Print file            ":PRINT:GOSUB 2330
616 s="(6)     Sort file by field    ":PRINT:GOSUB 2330

985 IF op=5 THEN GOSUB 7000:GOTO 750
985 IF op=6 THEN GOSUB 5000:GOTO 750

840 IF op<1 OR op>6 THEN PRINT CHR$(7):GOTO 830
```

```
                        Source File :-STAMPS

                        column  1 = COUNTRY
                        column  2 = DESC
                        column  3 = VAL
                        column  4 = YEAR

   1            2                                      3   4

 ALBANIA       DURRRE-ELBASAR RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-ELBASAN RLY CONSTRUCTION            1947
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DURRES-TIRANA RLY CONSTRUCTION             1948
 ALBANIA       DIESEL LOCO                                1972
 ALBANIA       DUARES-TIRANA RLY CONSTRUCTION             1948
 ANGOLA        STEAM LOCO                             4.5 1980
 ANGOLA        STEAM LOCO                             4.5 1970
 ANTIGUA       DIESEL LOCO                            25  1981
 ANTIGUA       N/O STEAM LOCO                         50  1981
 ANTIGUA       DIESEL LOCO'S                          90  1982
 ANTIGUA       STEAM LOCO                             83  1981
 ARGENTINE     WINGED WHEEL                           10  1949
 ARGENTINE     PEGASUS AND TRAIN                      5   1951
 ARGENTINE     'LA PORTENA' EARLY LOCO                48  1957
 ARGENTINE     DIESEL LOCO                            60  1957
 AUSTRALIA     CENTENARY                              3.5 1954
 AUSTRALIA     DOUBLE FAIRLIE  W.A.                   28  1979
 AUSTRALIA     PUFFING BILLY  VIC.                    35  1979
 AUSTRALIA     PICH RICHI LINE  S.A.                  58  1979
 AUSTRALIA     ZIC-ZAC LINE  N.S.W.                   55  1979
```

Making the grade

***Peter Bilbrough** presents a program to calculate your chess grading*

As every chess player knows, their grading represents a measure of chess ability, based on past performance. The higher the grading then the greater is the assumed level of skill.

The gradings are calculated annually during summer and are based on the results of games played between 1 May and 30 April as well as the existing gradings of each opponent. This is usually done at county or union level. However, often club secretaries and the players themselves keep an informal record for judging performance over a season. Those involved in the preparation of the official grading lists have numerous repetitive calculations to perform. There is therefore obviously a case where a computer program could be of great assistance. The following program, though designed for the Commodore 64, has purposely been kept simple enough for adaption to any other machine. It will process and store details of up to 100 games for each player.

The following points must be noted with regard to gradings.

1. If too few games are played during a season then results from the previous 12 months are also included. This is why it is important to keep a record of results. The *BCF* requirement is 30 games within two years and at least 10 in the most recent year. County and union graders usually accept a minimum of 18 and eight respectively. All other gradings, when based on fewer games, can be estimated only. The program gives a comment on the acceptability for grading of the results fed in.

2. When playing a person under 18 on the 1 September in the year of grading then it is necessary to add 10 points to the grading before typing in that information. It is assumed that juniors tend to improve more rapidly than other players and such an addition takes this into account. The more complex 'forty point rule' has been taken into account in the program and so will not be discussed in detail here.

3. When an opponent does not have an official grading he or she is often given an assumed grading. In the absence of any other information this is a notional 100. The program allows for selection of this figure. If the opponent is playing on a board between two graded players then it is usual to assign him a grading mid-way between the other two gradings – ie, 160 and 130 would suggest a grading of 140.

In order to assist further the program provides the percentage chance of success against an opponent. It also prints out the results in both *BCF* and *ELO* systems.

For those not fully acquainted with the significance of the gradings they broadly indicate as follows:

175-250	top county player to Grandmaster level.
150-174	Class 'A' players.
125-149	Class 'B' players.
100-124	Class 'C' players.
0-100	Class 'D' players.

```
10 REM
20 PRINT CHR$(147)
30 DIME(100)
40 GOSUB5000 PRINT INTRODUCTION
50 PRINT CHR$(147)
985
990 REM
995
1000 PRINT" DO YOU WISH TO LOAD DATA? (Y/N)"
1010 GETX$ IFX$=""THEN1010
1020 IFX$="N"THEN2000
1030 IFX$<>"Y"THEN1020
1035
1040 PRINT" (D)ISK OR (T)APE?"
1050 GETX$ IFX$=""THEN1050
1060 IFX$<>"D"ANDX$<>"T"THEN1050
1070 DT=1 IFX$="D"THENDT=8
1075
1080 INPUT" FILE NAME",NM$
1090 OPEN1,DT,0,NM$
1100 INPUT#1,NM$
1110 INPUT#1,G
1120 INPUT#1,N
1130   FORA=1TON
1140     INPUT#1,E(A)
1150   NEXT
1160 CLOSE1
1170 PRINTCHR$(147)
1180 GOTO3000 INPUT DATA
1185
1200 REM
1995
2000 PRINTCHR$(147)
2020 PRINT"GIVE LAST GRADING,
     IF NONE IS AVAILABLE"
2030 PRINT"THEN PRESS THE >RETURN<
     KEY IN ORDER TO"
2040 PRINT"INPUT A NOTIONAL GRADING
     OF ONE HUNDRED"
2045
2050 INPUT"100";G
2060 IFG<>INT(G)THENPRINT"TT" GOTO2050
2070 IFG<0ORG>270THENPRINT"TT" GOTO2050
2080 PRINTCHR$(147)
2090 N=0
2095
2110 REM
2995
3000 N=N+1
3010 PRINT"GIVE OPPONENTS GRADING
     FOR GAME NO "N
3020 INPUT"USE '0' TO END INPUT",E(N)
3025
3030 IFE(N)<>INT(E(N))THENPRINT"TT" GOTO3020
3040 IFE(N)<0ORE(N)>270THENPRINT"TT" GOTO3020
3050 IFE(N)=0THENN=N-1 GOTO3140
3052 IFE(N)=>GTHENV=50-(E(N)-G)
3054 IFE(N)<GTHENV=50+(G-E(N))
3056 IFV>100THENV=100
3058 IFV<0THENV=0
3060 H=G+40 L=G-40
3070 IFE(N)>HTHENE(N)=H
3080 IFE(N)<LTHENE(N)=L
3083
3085 PRINT"THE PROBABILITY OF WINNING
     WAS "V"%"
3090 INPUT"(W)IN, (L)OOSE OR (D)RAW";R$
3100 IFR$="W"THENE(N)=E(N)+50
3110 IFR$="L"THENE(N)=E(N)-50
3120 IFR$="D"THENE(N)=E(N)
3123
3125 PRINT"THE SCORE TOWARDS GRADING IS "E(N)
3127 PRINT"____________________________
     ________________" GOTO3000
3130 PRINT"TT" GOTO3090
3140   FORA=1TON
3150     T=T+E(A)
3160   NEXT
3165
3170 PRINT" THE NEW GRADING BASED
     ON"N"GAMES IS "
3180 PRINTINT(T/N)"BCF",8*INT(T/N)+600"ELO"
3182 IFN<18THENPRINT" THIS COUNTS AS AN
     ESTIMATE ONLY"
3183 IFN=>18ANDN<30THENPRINT" THIS COUNTS
     FOR COUNTY AND UNION"
```

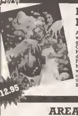
```
3184 IFN=>30THENPRINT"  THIS COUNTS FOR BCF
     GRADING PURPOSES"
3185
3200 REM
3995
4000 PRINT"  DO YOU WISH TO SAVE DATA? (Y/N)"
4010 GETX$ IFX$=""THEN4010
4020 IFX$="N"THEN4500
4030 IFX$<>"Y"THEN4010
4035
4040 PRINT"  (D)ISK OR (T)APE?"
4050 GETX$ IFX$=""THEN4050
4060 IFX$<>"D"ANDX$<>"T"THEN4050
4070 DT=1 IFX$="D"THENDT=8
4075
4080 INPUT"  FILE NAME",NM$
4090 OPEN1,DT,1,NM$
4100 PRINT#1,NM$
4110 PRINT#1,G
4120 PRINT#1,N
4130   FORA=1TON
4140     PRINT#1,E(A)
4150   NEXT
4160 CLOSE1
4170
4500 PRINT"  HAVE YOU FINISHED INPUT? (Y/N)"
4510 GETX$ IFX$=""THEN4510
4520 IFX$="Y"THENEND
4530 IFX$<>"N"THEN4510
4540 PRINTCHR$(147)
4550 T=0
4560 GOTO3000
4565
4570 REM
4995
5000 PRINT"                                  "
5010 PRINT"           GRADING CALCULATOR "
5020 PRINT"                                  "
5030 PRINT"   THIS PROGRAM WILL CALCULATE
     THE CHESS"
5040 PRINT" GRADING FOR A PLAYER BASED ON
     HIS LAST"
5050 PRINT" KNOWN GRADE AND THE RESULTS
     DURING THE"
5060 PRINT" YEAR.  PLAYERS WITHOUT A
     CURRENT GRADE"
5070 PRINT" ARE ASSUMED TO BE GRADED 100.
     UPTO ONE"
5080 PRINT" HUNDRED GAME RESULTS CAN
     BE CALCULATED"
5090 PRINT" AND STOPED BY THIS PROGRAM.   "
5130 PRINT"                                  "
5140 PRINT"       PRESS ANY KEY TO CONTINUE "
5150 PRINT"                                  "
5160 GETX$ IFX$=""THEN5160
5170 RETURN
5200 REM
```

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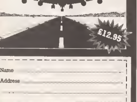
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Colourful location

*This utility from **David Jones** will help you poke colour on the QL screen*

The QL's screen is a godsend to anyone who has worked with the Spectrum's screen layout. The Spectrum's screen is in three distinct parts, whereas the QL's screen starts at the top left of the picture and progresses in order of the raster scan, ie, from left to right, top to bottom. The screen starts in memory at 131072 (20000 hex) and progresses in 16 bit words to 163840 (28000 hex).

There are two graphic modes (256 and 512). These determine the pixel resolution and the number of colours available. As with most systems the higher the resolution the less colours are available. In mode 256 the screen resolution is 256x256 pixels with eight solid colours available. In mode 512 the resolution is 512x256 with only four solid colours available.

When in mode 256 although the resolution is 256x256 the X-axis is still numbered 0-512 as if in mode 512. This has the effect of making every pixel have two possible co-ordinates, eg, Point 200,50 and Point 201,50 will both plot the same point.

Although the screen layout is quite straightforward and simple to understand the actual representation of the bits, in a word, in relation to the points plotted, is not so simple. The way the QL handles it is with the three basic colours red, green and blue and also a flash switch. Using these three colours and mixtures of the three we can obtain eight solid colours as follows: Black, Blue, Red, Magenta = Red + Blue, Green, Cyan = Green + Blue, Yellow = Green + Red, White = Green + Red + Blue.

The QL recognises certain bit patterns in a screen word as different colours. The bit patterns that the QL works from are as shown.

High Byte	Low Byte	Mode
GGGGGGGG	RRRRRRRR	512
GFGFGFGF	RBRBRBRB	256

G-Green B-Blue R-Red F-Flash

The above shows that setting a bit in the high byte of a screen address while in mode 512 will give us a single green pixel. Setting a pixel in the low byte will give us a single red pixel. If two corresponding pixels are set in high and low bytes then we will get a white pixel as the two colours will mix. (Note that blue is always present and this is why green and red will not give yellow.) As an example if we required eight pixels coloured red and white alternatively, then the low byte would have to be set at 11111111 and the high byte set to 01010101. As only the first bit of the low byte is set then this will give us a red pixel. As both the second bits of each bytes are set then the second pixel will be white (green + red + blue). The bits then repeat themselves giving us eight pixels of red and white. If we now convert the two bytes into decimal (256 * high byte + low byte) then we end up with 22015 decimal. This can now be placed onto the screen with the command *Poke-W* 140000,22015 and providing you are in mode 512 then a small red and white line should appear on the screen. Note that the number 140000 is just a screen address and any screen address may be used as long as it is even.

The method for colouring pixels in mode 256 is similar, but a little more complicated. As we have eight colours to chose from we are only allowed four pixels in a screen address. There are still eight pixels there, but we can only colour two at a time. Things are clearer if we examine the bit layout for mode 256.

High Byte	GFGFGFGF
Low Byte	RBRBRBRB

As you can see we now have a flash bit and a blue bit to deal with. This means that the first two bits of the high byte and the first two bits of the low byte are used to make up the colour of the first pixel. Obviously then we can only have four pixels to colour but we can now have eight colours with any pixels flashing if we require. If, for example, we wanted the first pixel white, then we would have to mix green, red and blue. This entails setting the first two bits of the low byte (red and blue) and setting the first bit of the high byte (the green bit). If we wanted this pixel flashing white then the second bit of the high byte would also have to be set (the flash bit).

As an example if we wanted to colour the four pixels at screen address 140000 blue, red, magenta and green then we would proceed as follows

High Byte	00 00 00 10
Low Byte	01 10 11 00
	bl rd mg gr

Spacing out the bit patterns shows more clearly how to obtain the required colours. Once again by multiplying the high byte by 256 and adding to this the low byte the decimal equivalent can be found (620).

Finally I have included a program which will let you type in four required colours and then return the decimal equivalent to be poked into memory. By first designing a shape and then converting it using the program a form of shape table could be set up in memory if required. The program runs in mode 256 and the user inputs four consequetive ink numbers, eg, 1236 for blue, red, magenta and green and the program will then give you the decimal equivalent for a line four pixels long.

```
100 CLEAR
110 DIM c$(8,4)
120 FOR i=0 TO 7:READ c$(i):NEXT i
130 DATA "0000","0001","0010","0011"
140 DATA "1000","1001","1010","1011"
150 h1$="":l1$=""
160 word=0
170 PAPER 0:INK 7:CLS
180 AT 2,1:INPUT "Colour byte ? ";byte$
190 FOR i=1 TO 4
200 LET n=byte$(i TO i)
210 LET col$=c$(n)
220 LET h1$=h1$ & col$(1 TO 2):
    LET l1$=l1$ & col$(3 TO 4)
230 NEXT i
240 LET byte1$=h1$ & l1$
250 FOR i=1 TO 16
260 IF byte1$(i TO i)="1" THEN
    LET word=word+2^(16-i)
270 NEXT i
280 AT 3,1:PRINT "word=";word
```



Entombed

There's nothing like being quick off the mark – no sooner did I say that having finished with *Staff of Karnath*, we were looking for tips on Ultimate's new Commodore game than this letter arrived from Terry Wess of Hewton in Derbyshire "Having just bought *Entombed* I think that I have done pretty well to get to level 7 and here is a list of directions I have used to get there Level 1 – right, up, right, up, down, right, up, right, up Level 2 – left, down, right, right, down, right, up Level 3 – left, left, up Level 4 – right, down, right, right, right, down, right, right, down, right, up Level 5 – left down, right, right, down, right, up Level 6 – left, left, left, down right up I can't find an exit to level 7, if there is one.

"Some people may be having difficulties in rooms with objects in front of the doors eg, statues, lava pools, rocks To get past these go to the top right hand corner where the wall goes in and jump to the left If you can't do this move down a bit and try again When you do jump press 'forward' on the joystick in mid air and you should faint 'in' the object and then go through the door When you are in the next room, stop pressing forward or you will go back again. You can use the small idol to move the statue from the door

"For those of you who get down on to lower levels you may stumble across a couple of hard rooms One has two different levels, a large crocodile and a ball at the other side *Go* up to the ball but don't touch it, from there go to the left as far as you can below the ball, turn around and start whipping It It should start rolling along and you can whip it onto the small platform Get on this yourself you should go down and the crocodile starts moving Very quickly go to the chest then run back on the platform. Whip the ball off it and when you reach the top run along and try to beat the crocodile to the slope If you get out without being hit you will get full energy

"Another split level room has a large statue, a shelf with a vase on it and a big chunk of something Whip the vase across the shelf until it falls on the lift Then go back and whip the chunk onto the little square platform on the right Then everything should start to move including the statue and you will find a chest behind it This contains the scroll of Iris I hope people find these tips useful, but I need help in return for quite a few rooms including the ones with the discs " Thanks very much for that, Terry, and hopefully we will soon hear how to do more from the many star players who cracked *Entombed*.

Sticking with the CBM for a minute here's an interesting letter from Adam Hill of Redditch who makes the comment, "I don't know what all the fuss is about *Staff of Karnath*, I bought the game and was rather disappointed after seeing all the Spectrum masterpieces *Entombed* however does look more promising " I think the big problem with Ultimate's first CBM release, Adam, was that people's expectations were very different to what they finally received. Although I certainly don't rate it as the best game ever for this machine I still find it an extremely playable and enjoyable program, more so in retrospect than some of Ultimate's earlier Spectrum games

Anyway leaving such things aside, Adam has this claim to fame – 'I have just finished Firebird's *Gogo the Ghost* by managing to get to room 150 and rescuing the princess (poor helpless female that she is, and weakened by centuries of inbreeding) I achieved the rank of Master *Gogo*. Here is a list of passwords that will help you all through." (I have printed these just as Adam has written them, so any grammatical inaccuracies will have to be blamed on him, or on the programmer of the game depending on who is at fault)

Room 12 – pollys paradise, 15 – headache, 23 – shooting stars, 27 – fluttering bats, 31 – pac is back, 36 – horse power balloontrip, 48 – silent rooms, 50 – turbo tortoises, 52 – mad towels, 56 – ball game, 62 – skulking teeth, 70 – arrack, 73 – snowblind 80 – boat float, 98 – dental fear, 128 – time for tea, 140 sub invasion, 150 oooooooooooooooo

Finally Adam wants to recommend *Rocketball*, *Raid Over Moscow* and the *Soft Aid* compilation as good buys and wants to know if anyone can help him cheat at *Bounty*, presumably the CBM version.

Adam is the first I've heard of to finish this game and to round the column off this week here are some more firsts James Smith of Rothwell completed *Monty Is Innocent* back in February – "It shows you walking off up the road and says *Off You Go Into The Sunset* plus some more text that is only up for a few seconds "

ET Millership of Moreton has finished the Amstrad version of *Jetset Willy* with 175 objects and 133 rooms (so it is possible after all – just goes to show you shouldn't believe all you read) "After going to the bedroom you walk back to the bathroom and it puts you back in *The Central Cavern* – unfortunately you cannot collect the keys or go through *Manic Miner*" He has also sent in some new pokes for the Amstrad *Manic Miner* to be put into the basic loader (you have to deprotect it) in line 100 before the CALL statement.

The pokes are &6F8D,n where n is required lives, &7401, 24 allows you to switch screens by pressing the 'ESC' key; &713E,0 allows you to drop from any height, &7311,0 stops air running out

Well done you two, and also Simon Cleland for finishing Mikro-Gen's *Wally* and M Mallett who has completed *Castle Quest* – your letters are too interesting to squeeze in here and we will print them in a week or two

In the meantime I have an important announcement – by a slow process of deduction based on the comments some of you have made I have realised that some letters sent to the Avenue have never reached me

Anyone who has sent in an important letter this does not get a mention in, say, the next month should consider writing again. I enjoy all your pokes and letters and would hate to miss out on anything, but remember we do have a lot to fit in each week and sometimes it can take me a long time to find room to clear the backlog

Tony Kendle

We are searching for the top UK computer games player – the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games – scheduled for release in the autumn.

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Study the table below and look at the column for the machine you have – these are the games you'll need to master. Send your high scores in on the form below making sure that your scores are authenticated by a responsible individual signing the form. Any score achieved using technical short-cuts – such as infinite lives Pokes – will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our top secret games.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Splat
Game 3	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

Game Wizard Entry Form

Micro

Game 1 score

Game 2 score

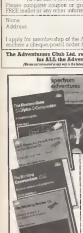
Game 3 score

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Tony Bridge's Adventure Corner



Classic game

I see that *Lords of Time*, from Level 9, still figures high in some of the software charts, and many adventurers are still requesting help, so I think that we should have another quick look at this classic (and it *has* been mentioned in the Corner, despite what some people may think!)

As you'll know, the word 'classic' is deserved in this case classic in the sense that it is the paragon of its kind, and also a program that will be remembered when other, lesser, adventures are forgotten

The adventure is available for a range of machines which includes the BBC, Amstrad, Commodore 64, Spectrum, Lynx, Atari, Oric and so on, so just about everyone should be catered for For those of you who have not been tempted into buying this cracking game, the plot concerns your quest to collect nine symbolic objects which together can repair History, upon which nine evil Timelords have been wreaking havoc. Each object is to be found in one of nine time zones – from the Ice Age to the Stone Age, to Roman, Viking, Medieval, and Tudor periods and on up to the Present, Future and Far Future.

This, together with the usual Level 9 prose, ensures a highly atmospheric adventure – as History is being meddled with, some pretty strange things might also happen to you!

Let's get on to the main problems that seem to give trouble The very first problem can hold people up for some time – the starting location is your living room Don't forget one of adventuring's Golden Rules *Examine everything* (and it's a good idea to do this twice in some games) in the present case, you could also type *Look* Going North will bring you to the Clock, which acts like a Tardis

If you 37,9, then type 36, you'll now find yourself in the clock. From here you can go to any of the time zones by 32,1 Although it's possible to go to any zone from here, forays into the higher-numbered ones should, at the start, be only explorative, as to progress in the adventure, you'll need some items from earlier zones

So, here we are in the first time zone, and the first main problem, how to get the lodestone? All you have to do is 25,39,10 – the flower is a narcissus, geddit?

The lodestone is a highly magnetic substance, so you should be able to find a use for it If not, try 40,3,36,30! I won't dwell any longer on Zone 1, however, as it has been covered more than once in the Corner

Let's go on to Zone 3, the Stone Age Here, you'll be confounded by the Skeleton, but all you need do is 2,41 As for the Caveman nearby, this problem has been covered more than once, so you're on your own here! The Mirror, however, from the deep pit will come in handy in getting past the Caveman.

Back in Zone 2, the Ice Age, to get the Icicle in the Frozen Chamber, you will have to loosen it by 38 On to Zone 4, the Viking era, and here you will need that fur coat that you found in the Ice Age Near the Long Ship you will come across a shivering Viking If you give him the Fur, he'll give you the Lar – awesome cosmic forces at work here, aren't there?

Pirate Pete is a big problem in this Zone, as he will steal things to put into his treasure chest (people playing *Adventureland* or *Colossal Caves* will recognise this character), and to get rid of him, you must 16,1, upon which, someone else will take over the problem.

In Zone 8 (Roman times) the Lion can be a problem (well, he seems to like nice warm human meat!) and to deal with it, you can 24,31 To prevent the problem occurring again, 12,23,11

There's a neat little problem in Zone 6, the Tudor period. Not far from the clock, you'll find a Bell and a Pack of cards. If you 16,23, you'll find a comedian! Now, 42,17 to get something fitting

Back now to Zone 5, the Medieval Period, and one of the big hang-ups here is getting past the Black Knight. Don't lash into him, which may seem the thing to do, particularly as you have a nice sword from Zone 2 (you'll find this NW from the frozen lake – to get it, 31,19,23,7) But don't be tempted! Instead, seek help from a companion and 36,20,4,20

This last tip was passed on by John English, who also draws my attention to another way of getting through Level 9 (and other adventures) on the BBC Beebers have a luxury denied the rest of us mere mortals, in that they can quite easily, it seems, break into the game and list out the vocabulary used in the program.

Now, while I don't for one moment condone this method of playing (neither do I condemn it!) this is a democratic column, and for those who can't resist, try the following

In any game, press Break to leave the game and VDU 14, then in any Level 9 game, apart from *Return to Eden*, type *FOR P= &1000 to &1A00 IF ?P> 37 AND ?P< 123 THEN PRINT CHR$(?P),:NEXT ELSE PRINT NEXT* then use *CALL &7320* to restart the game

For the Mysterious Adventures Change the two values to &4100 and to &5A00 respectively, and use *CALL &1D9B* to restart

For Scott Adams (as translated by Brian Howarth) Values of P as for the above, and use *CALL &1902* to restart. For other Scott Adams change the values to &3600 and &5B00 respectively – use *CALL &2000* to restart

John also offers any help on the Level 9 series, Scott Adams and Mysterious series, as well as several other (mostly Acornsoft) adventures If you want some advice, or just want to talk about the wonderful subject of adventuring in general write to John at 65 Bunbury road, Northfield Birmingham B31 2OW

1 Lar 2 Throw 3 Key 4 to 5 Planks 6 Clock 7 Pick 8 The 9 North 10 Glass 11 Trident 12 Pin 13 Cog 14 Roadworks 15 Shuffle 16 Blow 17 Bell 18 Pendulum 19 Ice 20 Sword 21 Smash 22 Cards 23 With 24 Throw 25 Give 26 Collect 27 Wind 28 Prince 29 Push 30 Shed 31 Net 32 Turn 33 From 34 With 35 Tie 36 In 37 Go 38 Shouting 39 Looking 40 Getting 41 Pebble 42 Ring 43 Block.

This series of articles is designed for novice and experienced adventurers alike. Each week Tony Bridge will be looking at different adventures and advising you on some of the problems and pitfalls you can expect to encounter So if you have an Adventure you want reviewed, or if you are stuck in an Adventure you cannot progress any further write to Tony Bridge Adventure Corner, *Popular Computing Weekly* 12-13 Little Newport Street London WC2H 3LD.

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Please write your copy in capital letters on the lines below

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SINCLAIR QL, BC PL works and mags Unemployment forces sale at £300 Tel 0781 73556

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Event	Dates	Venue	Admission	Organisers
ZX Microfair	June 22 10.00am – 6.00pm	New Horticultural Hall Greycoat St London SW1	£1.50 adults £1.00 children	Mike Johnson 01-801 9172
Third Official Acorn User Exhibition	July 25 Trade 10.00am–1.00pm July 26 28	Barbican Centre London EC2	£3 adults £2 children	Computer Marketplace (Exhibitions) Ltd 01 930 1612
[illegible]	Aug 11	Burnley General Hospital	80p adults 80p children	Falcon Computer Services 0282 53241
Personal Computer World Show	September 4-8	Olympia London	£3.00	Montbuild 01-486 1951

Wanted

SWAP Jupiter Ace for Vic 20 or 16K Spectrum Tel Ashford 07842 45481

ACORN Electron to swap for Atari 800XL or sell for £79 Very good condition only 2 months old All leads and two manuals included Tel A Howard 661 223 8602

WANTED the parts for non-working, but physically undamaged Spectrum plus will pay up to £40 Tel Alan 01-399 1188 4-8pm

QL pen pal wanted 14 years of age preferred To give tips etc Arran Tel Queen 412564

IBM club needs apple C64 game prog that run on IBMPC also contact wishes with Fill IBM user in clubs Derek Mensing Frankfurter Str 278 3300 Braunschweig West Germany

WANTED CBM/Pet disk drive with cable for Pet. Dual drives preferred EG 2040 3040 4040 or would consider single drive Will pay cash and collect if required Tel 0244 875717

SINCLAIR flat screen TV wanted swap 48K Spectrum also wanted BBC hardware for same Spectrum Tel Mark on Woolford 36550 after 6pm. (Also want Acorn Electron)

URGENTLY required CBM 64 switchable cartridge port expander/motherboard any make/model Cash waiting or swap for 120+ magazines and cash Tel Steve anytime on 0357 21221 Possibly swap Kodak Instamatic camera

BBC B plus graphics Rom joysticks books magazines plus £850 s/w and leads and tape recorder Swap for CBM 64 and disc drive and tape recorder and joysticks and games etc. Tel Richard 01 847 9858

SWAP CBM 64 + C2N + 1535 printer for BBC B OFS preferred but not essential Must be good condition Tel Ipswich (0622) 75657

WANTED QL penpal any age to swap ideas information programs and books. Please write to 44 Hawkwood Crescent, London E4 7PN

SHARP MZ80K 48K built in monitor cassette offers above £100 or part exchange Texas hardware software Sord CGL M5 peripherals wanted would consider CBM + 4 and cassette unit in swap for Sharp Tel 0480 75036

SWAP BBC model B 1.2 OS plus £270 worth of software for Spectrum + or CBM 64 plus extras or any other reasonable offer Tel Thanet 65976 after 4pm

SWAP 48K Spectrum books mags and logic 3 basic programming course For Atari 800XL plus data recorder and s/w or sell £186 Tel 031-661 3461 before 8pm

SHUWA CP80 printer spec as per Epson MX80 excellent condition 1 year old £165 ono Star SG10 brand new purchased in error £225 ono Tel 01-346 0145 day / or 01 346 0037 evenings

PACE Nightingale modem with Commstar Rom and manual for BBC B computer £100 Tel 051 526 6720

ADVENTURE HELPLINE

Erik the Viking on BBC. How do I get past the troll? Simon Jeppe Knack House Membury nr Axminster, Devon

Knights Quest on Spectrum. In the cliff how do I charm the snake and get the stone casket? Christine Gott 11 Blackburn Bank Grove Keighley, Yorks

Lords of Time on Amstrad. How do you get into the shed? How do you get past the dinosaur? R M Batchelor 74 Queens Avenue Finchley London N3 (01 343 0407)

Spiderman on Commodore 64. How do you get the bio-gem? I can give help on other adventures in return - Voodoo Castle and more. Mark Richards 21 Greenside Road, Mirfield W Yorks

Eureka – Roman Times on Commodore 64. I can't find the golden eagle and I can't get into the army camp Terry Crowe 26 Blackhorse Crescent Amersham, Bucks

Knights Quest on Spectrum. How do you get the princess back from the eagle - it keeps attacking me? R Wilson 6 Westfield Terrace Loftus, Saltburn, Cleveland

Spiderman on Spectrum. How do I get past Mysterio? Jan Fraser 30 Russell Crescent Lerwick Shetland Isles

Hobbit on Commodore 64. How do I negotiate the forest road without getting stung? What is to be gained by crossing the black river? Dave Mansergh 33 Ravenscroft Avenue Ormskirk Lancs

Lucifer's Realm on Atari. What do I do in the black forest after confessing to the figure? Neil Webb 86 Alderley Little Digmoor Skelmersdale Lancs

Zkul on QL. How do I use the trap do I put the rod in the cup? What is the message in the pentangle? Rhys Evans The Rookings Owl Lane Woolton, Liverpool L25 5NN

Sherlock on Spectrum. I have found the items in the desk the bookcase and the garden What next? Please help Marcus Giles 7 Shaw Road Royton, Oldham Lancs.

Eureka on Spectrum. Where do I go after I have got the book and felt the bunker in the Colditz adventure? P G Richardson Ship's Plumber RFA Tidespring BFPO Ships London

Emerald Isle on Amstrad. How do I get a source of light? I cannot even find the key Steven Bishop 13 Oceanover Close, Brixham Devon

Invincible Island on Spectrum. I cannot find the last parchment! Michael Mee 7 Bembridge House, Iron Mill Road, Woodsworth London SW18

The Island on Spectrum. How do I enter the old wooden house? And do I get my character to take the quinine so I can go through the swamp David Simpson. Fire Station RAF Buchan, Peterhead, Aberdeenshire

Pettigrew's Diary on Electron. The Underground is always on strike How do I get the package from Cleopatra's needle? A Rollo Valence Tower Regent Gate Bothwell Glasgow G71

Sphinx on Electron. My lamp keeps running out. How do I pass the dragon? A Rollo Valence Tower Regent Gate Bothwell Glasgow G71

Circus on Spectrum. How do I find and get the missing cable for the generator? C S Rasner 2 Mill Hill Road, Hinckley Leicestershire.

Kentilla on Spectrum. How do I open the chest in Tylon's bedroom – I have the golden key? How do I repair the boat? C S Rasner 2 Mill Hill Road, Hinckley, Leicestershire

System 15000 on Spectrum. How do I get onto the Selcra notice board? What do the numbers mean at the top of the menu? Eddie Skelson 21 Keyworth Walk Eaton Park Estate Berryhill Stoke-on Trent, Staffs

Hampstead on Spectrum. How do I get the lathe bracket? Eddie Skelson 21 Keyworth Walk Eaton Park Estate Berryhill Stoke-on Trent Staffs

Jewels of Babylon on Amstrad CPC 464. I can't open the door in the dusty corridor (I can't find the key) Jan Carlen Bakrujt 28 5800 Haugesund Norway

Colditz. How do I get past the broken ladder in the chimney? S K Lyle 96 Judge Heath Lane Hayes Middx

Zkul on QL. How do you see the forest? Where is the paraffin? Where is the boat? John R Rowe 1 St Leonard's Court Sledington Oxford.

Emerald Isle on Spectrum. I can't find the axe how can I get into the cave where you have to prop the fence post up Matthew Belgham 1 Willow Mead, Chigwell Row Chigwell Essex

Castle of Riddles on BBC. I can't get out of the maze of white rooms Gary Marcham 81 Hillside Lane Arnold, Nottingham.

Heroes of Karn on Amstrad. How do I kill spider bat or witch? What does the pirate want? (I can help anyone with Forest at World's End or Pyjamarama) Paul Wilkins 3 Rock Close Bristol.

Charts

Amstrad

1	(1)	Knightlore	(Ultimate)	£8.95
2	(2)	Alien 8	(Ultimate)	£8.95
3	(3)	Ghostbusters	(Activision)	£10.95
4	(4)	Sorcery	(Virgin)	£8.95
5	(10)	Minder	(DK Tronics)	£9.95
6	(6)	Confusion	(Incentive)	£6.95
7	(8)	3D Star Strike	(Real Time)	£6.95
8	(9)	Tankbusters	(Design Design)	£7.95
9	(-)	Combat Lynx	(Durell)	£8.95
10	(7)	Super Pipeline II	(Taskset)	£9.90

Bubblers:

D T Decathlon	(Ocean)	£8.95
Dark Star	(Design Design)	£7.95

Atari

1	(2)	F15 Strike Eagle	(US Gold)	£14.95
2	(1)	Bruce Lee	(Datasoft/US Gold)	£7.95
3	(3)	Pole Position	(Atarisoft/US Gold)	£6.95
4	(5)	Ghostbusters	(Activision)	£10.95
5	(7)	Smash Hits 3	(English Software)	£14.95
6	(-)	Kissing Kousins	(English Software)	£9.95
7	(4)	Fort Apocalypse	(US Gold)	£8.95
8	(9)	Drelbs	(US Gold)	£9.95
9	(-)	Zaxxon	(Sega/US Gold)	£14.95
10	(10)	Beachead	(Access/US Gold)	£14.95

Bubblers

Decathlon	(Activision)	£9.95
Mr Do	(US Gold)	£9.95

BBC

1	(3)	Revs	(Acornsoft)	£14.95
2	(2)	Alien 8	(Ultimate)	£9.95
3	(1)	Knightlore	(Ultimate)	£9.95
4	(4)	Atic Atac	(Ultimate)	£7.95
5	(-)	Magic Mushrooms	(Acornsoft)	£12.50
6	(7)	Wizadore	(Imagine)	£7.95
7	(-)	Combat Lynx	(Durell)	£8.95
8	(8)	Gremlins	(Adventure International)	£9.95
9	(5)	Elite	(Acornsoft)	£14.95
10	(6)	Brian Jacks Superstar	(Martech)	£7.95

Bubblers:

Castle Quest	(Micropowers)	£12.00
Hampstead	(Melbourne House)	£6.95

Commodore 64

1	(1)	Dambusters	(Sydney/US Gold)	£9.95
2	(6)	Shadowfire	(Denton/Beyond)	£9.95
3	(3)	Pitstop II	(Epyx/US Gold)	£9.95
4	(2)	Soft Aid	(Soft Aid)	£4.99
5	(5)	Theatre Europe	(PSS)	£9.95
6	(4)	International Basketball	(Commodore)	£5.99
7	(7)	Herbert's Dummy Run	(Micro-Gen)	£9.95
8	(-)	Bounty Bob Strikes Back	(Big 5/US Gold)	£9.99
9	(9)	Spitfire 40	(Mirrorsoft)	£9.95
10	(8)	Impossible Mission	(Epyx/US Gold)	£7.95

Bubblers:

Rocky Horror Show	(CRL)	£8.95
Jump Jet	(Anirog)	£9.95

Spectrum

1	(3)	Shadowfire	(Beyond)	£9.95
2	(1)	Soft Aid	(Beyond)	£5.95
3	(2)	Starion	(Melbourne House)	£7.95
4	(4)	Tapper	(Sega/US Gold)	£7.99
5	(-)	Dun Darroch	(Gargoyle Games)	£9.95
6	(6)	Herbert's Dummy Run	(Mikro-Gen)	£9.95
7	(7)	Rocky Horror Show	(CRL)	£8.95
8	(9)	Spy Hunter	(Sega/US Gold)	£7.95
9	(-)	Grand National	(Elite)	£9.95
10	(-)	Nodes of Yesod	(Odin)	£9.95

Bubblers

Falcon Patrol 2	(Virgin)	£9.95
Minder	(DK Tronics)	£9.95

All figures compiled by Ram/C

Top Twenty

1	(1)	Soft Aid *(Spectrum/C64)*	**Various Artists**
2	(3)	Dambusters *(C64)*	**Sydney/US Gold**
3	(2)	Knight Lore *(Spectrum/BBC/Amstrad)*	**Ultimate**
4	(9)	Revs *(BBC)*	**Acornsoft**
5	(5)	Alien 8 *(Spectrum/BBC/Amstrad)*	**Ultimate**
6	(4)	Pitstop II *(C64)*	**Epyx/US Gold**
7	(7)	Shadowfire *(Spectrum/C64)*	**Denton/Beyond**
8	(6)	Herbert's Dummy Run *(Spectrum/C64)*	**Mikro-Gen**
9	(13)	Starion *(Spectrum)*	**Melbourne House**
10	(11)	Spy Hunter *(Spectrum/C64)*	**Sega/US Gold**
11	(12)	Tapper *(Spectrum/C64)*	**Sega/US Gold**
12	(8)	Theatre Europe *(Commodore 64)*	**PSS**
13	(5)	International Basketball *(C64)*	**Commodore**
14	(15)	Atic Atac *(Spectrum)*	**Ultimate**
15	(14)	Rocky Horror Show *(Spectrum/C64)*	**CRL**
16	(–)	Dun Darroch *(Spectrum)*	**Gargoyle**
17	(20)	Minder *(Spectrum/Amstrad)*	**DK Tronics**
18	(19)	Jonah Barrington's Squash *(Spectrum/C64)*	**New Generation**
19	(18)	Spitfire 40 *(C64)*	**Mirrorsoft**
20	(16)	Impossible Mission *(C64)*	**Epyx/US Gold**

Figures compiled by Ram/C

Readers' Chart No 28

1	(1)	Soft Aid (Spectrum, C64)	**Various Artists**
2	(2)	Knight Lore (Spectrum, BBC, Amstrad)	**Ultimate**
3	(4)	Alien 8 (Spectrum)	**Ultimate**
4	(5)	Confusion (Spectrum/Amstrad)	**Incentive**
5	(3)	Everyone's a Wally (Spectrum/C64)	**Mikro-Gen**
6	(8)	Gyron (Spectrum)	**Firebird**
7	(10)	Match Day (Spectrum)	**Ocean**
8	(6)	Elite (C64/BBC/Electron)	**Firebird/Acornsoft**
–	(10)	Bruce Lee (Spectrum/C64)	**US Gold**
10	(9)	Finders Keepers (Spectrum)	**Mastertronic**

Winning phrase No 28: "Sorry, no-one likes a flat TV" from Jeff Peires Mecklenburgh Square, London, who receives £25. Others who came close include "Wogan's forever on telly" from David Crowther of Shirley, Solihull and "Daley has twenty feet" from R. Robertson of Mossend, Lanarkshire

Now voting on week 30 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don t want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street London WC2H 7PP

Voting for Week 30 closes at 2pm on Wednesday June 26 1985 Entries received after that time will not be eligible for inclusion in that week's voting The judges decision is final. Only one entry per individual per week will be allowed.

Name ....

Address ....

....

....

My top 3: Voting Week 30

1..

2..

3..

My phrase is: ....

New Releases

60s QUEST

Beatle Quest is an adventure game based around the lyrics and characters from that wacky bunch of loveable Liverpudlians the Beatles, who were very nearly as famous as Duran Duran in their day

Now the thing about the Beatles is that they were very popular in the 60s and in the 60s things had hidden meanings. People used to spend hours peering at the cover of Sgt Pepper (did the hand over Paul McCartney mean he was dead?) and listened to the mysterious track No 9 on



the White album. People spent their lives unravelling pointless, inane and foolish mysteries This brings us to adventure games

Beatle Quest is a text adventure set in the 60s where the lyrics of the Beatles actually become important in solving the quest. It's Quilled which means the language analysis is fairly basic – two or three word stuff – but it is machine coded and the screen layout is fairly neat

The thing that prevents *Beatle Quest* from merely being a boring old hippy indulgence (Neil) is the touch of the ironic (do you want to play again? becomes do you want another trip?) and the cleverness of the design and the excellent descriptions of each location. You get a genuine feeling of joss stick filled, dingy, psychedelic poster riddled hippy pads from the first couple of location descriptions alone

The game's ingenuity is also its commercial weakness – its creator(s) have deviously wound the whole thing around Beatle lyrics, which means that whilst it's a must for utter addicts, casual text adventure fans may find it simply too esoteric Nevertheless, I hope it does well, a lot of imagination, effort and devotion has obviously gone into it.

Program *Beatle Quest*
Price *£9 95*
Micro *Commodore 64*
Supplier *Number 9 Software*
47 St Georges Avenue West
Wolstanton
Newcastle under Lyme
Staffordshire
ST5 8DF

VIOLENT

The latest release from US Gold is a follow-up to *Beach-Head*, imaginatively called *Beach-Head II – The Dictator Strikes Back.*

It is in fact very similar to its predecessor – managing to be both technically very good indeed, and after only a few plays very boring

It doesn't really matter how good your graphics and sound are (and both are very, very good indeed) if you haven't got much of a game.

Once the usual amazement of shooting the little figures running about on screen who yell "Medic," "I'm hit," "Follow Me!", "Aaaaarrrggg!" or just belch, as some of them seem to, has worn off, you realise that the first four screens are repetitive and frankly nasty. The fifth and last is just silly, throwing sharpened sticks at one another across a deep ravine

As I'm sitting here, there are thoroughly blood curdling screams emerging from the Commodore

The game can be played by *one* or two players, and you can choose levels of difficulty and whether you want to practice or not.

No doubt it will be a winter – it's violent in the extreme, and requires a minimum of thought – so much so it makes you appreciate the thrills of being a conscientious objector

Excellent graphics and sound, wasted.

Program *Beach-head II – The Dictator Strikes Back*
Price *£9 95*
Micro *Commodore 64*
Supplier *US Gold*
Unit 10
The Parkway Industrial Estate
Heneage Road
Birmingham
B7 4LY

PUZZLED

Mordoo's Quest is the latest adventure from Melbourne House, and is supposed to be a successor to *Classic Adventure.*

There's not a great deal that you can say about an adventure in New Releases, but first impressions suggest a decent, text only adventure, with some fairly absorbing puzzles

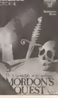
The parser is limited to two words only, but this is after all standard – we can't expect all Melbourne House games to understand inglish.

There are some apparent omissions – mainly in the area of abbreviations

For example, most programs accept 'look' or the abbreviation 'l' for 'look' – but not that one. What's more, while most adventures take 'look' as meaning 'redescribe the present location', this one takes it as meaning 'search' In other words, you have to start all over again learning a completely new vocabulary

Perhaps these gripes are a bit unfair, but Melbourne Nouse should expect it – after all they did produce *The Hobbit*, so they only have themselves to blame if everything else is measured against it.

Mordon's Quest is a good, basic adventure which will



keep the grand Elf happy for quite a time, I'm sure

Program *Mordon's Quest*
Price *£6 95*
Micro *Amstrad CPC464*
Supplier *Melbourne House*
Castle Yard House
Castle Yard
Richmond
TW10 6TF

IN TUNE

When Commodore launched its little add on music keyboard we were promised a number of programs to go with it just recently three packages have been released – *Popular Classics*, *Pop Hits* and *Beatles* All use the same format of a number of cunningly arranged tunes which are used as the basis for simple musical teach yourself ideas.

The Classical package includes such epics as *The Hall of the Mountain King* and *Minuet in G* rendered in three channels – it will offend purists but the arrangements are clever none the less

You supply the main theme yourself by stabbing at the Commodore 64 keyboard (it's obviously a lot easier if you have the add-on keyboard) More than that, the computer will display the notes on screen, play the tune with some decorative graphics and at the speed you prefer The playalong works in two ways – either it will wait for you to find the right note before it continues, or you simply have to try to keep up and stay in time

The tunes are also printed in an accompanying booklet so that you can see what you've been playing looks like properly notated. For basic sight reading practice it really works rather well – but it doesn't go far, I think you'd master all the tunes fairly quickly and so quickly exhaust the possibilities

I'd have liked to have seen a few more difficult tunes, though

Program *Popular Classics*
Price £9 95
Micro Commodore 64
Supplier Commodore, 1 Hunters Road, North Weldon Industrial Estate, Corby

New Releases

PUNCHY

The current bundling deal on the Einstein at Dixons is very attractive if you have a definite small business use for the machine. This, despite the strong business slant, must spill over positively into games software for the machine.

Terminal Software has recently released *Lazy Jones* for the machine and although it costs a whopping £12.95 (the fault of being on 3½" disc) it's actually one of the best versions of this minor classic.

Lazy Jones is really a dozen or so arcade games joined together by a tenuous plot where, as a hotel cleaner, you keep dodging people and hiding in cupboards where, it turns out, different arcade games are stored.

You will recognise all the games as variants on the classics, *Space Invaders*, *Matrix*, *Jet Set Willy* and so on. The TV screen within the TV screen idea works very nicely. On the Einstein the screen is very much like the Commodore 64, plenty of detail and nice animation. The sound is very punchy, an electro rock arrangement of the song of the program title – the Einstein speaker is nice and large if somewhat tinny. One of the best Einstein games yet, a pity about the price, though.

Program *Lazy Jones*
Price *£12.95*
Micro *Einstein*
Supplies *Terminal Software*
Derby House
Derby Street
Bury BL9 0NW



EXPENSIVE

Dropzone is proudly declared by US Gold to be a mixture of *Defender* and *Jetpac* which means the game is like *Defender* and the central character looks like the little Spaceman from *Jetpac*. I didn't take this to be a recommendation and it wasn't – it looks like the programming techniques and plot style of over a year ago and would get *Entombed* owners (a different kind of game I admit) sniggering madly.

Best bit of the game is the alien landscape over which tiny sprites do battle. It has the virtue of being detailed and quite nicely drawn but doesn't last long – as you zoom around you quickly see the same features twice. Perhaps it's a very, very small alien stronghold.

Aim of the game is to blast pulsating, flashing, spinning, whizzing sprites whilst also collecting rare Ionian crystals and stranded humans. You are a miniature Jetman and the aliens are of the same genus as all those aliens found in laser zap games. All this would be forgiven if it costs £2.50 but at £9.95 the program is competing with the likes of Beyond's *Shadowfire* and *Doomdark's Revenge*.

Unimaginative, technically dull and incredibly expensive.

Program *Dropzone*
Price *£9.95*
Micro *Commodore 64*
Supplier *US Gold*
Unit 10
The Parkway
Industrial Centre
Heneage Street
Birmingham
B7 4LY

Pick of the week

ESSENTIAL BUY

Firebird is soon to issue a program it believes will be better received and more successful than *Booty*. The program is *Cylu* and graphically it looks like early Ultimate demos for the 3D routines in *Knight Lore*, ie, similar look, but more basic graphics.

The game plot also owes something to Ultimate's finest – the idea is that you search through a vast maze, overcoming obstacles, for 24 objects which must be returned to the start point to solve the game.

Obstacles take the form of puzzles – teleporters that won't work until you find the correct key – force fields which must be disabled and a continuous fuel problem which means half your time has to be spent looking for fuel pods.

Original it's not, although it does contain some new ideas. On the other hand even graphics that look half like *Knight Lore* look pretty good. The game is vast, there are some nice animated objects (look out for the dice which has moving spots – if that's what it is) and at £2.50 it's another one of those games that's capable of wiping the floor with many others three times its price. An essential purchase.

You'll have to wait a bit, though – release date is early August.

Program *Cylu*
Price *£2.50*
Micro *Spectrum*
Supplier *Firebird*
Wellington House
Upper St Martin's Lane
London
WC2H 8DL

REASONED

Black Knight Software is an independent Amstrad software house whose most recent release is *Time Bomb*, a version of the arcade game of the same title.

The game involves shunting a boot around a matrix of squares to reach a timebomb. As you pass across a square it disappears making subsequent timebombs more and more difficult to reach. It's a fast action game which needs reasoning as well as zapping.

This is a fairly true version

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Mordon's Quest	Ad	Amstrad	£6.64	Melbourne House
Beach Head	Arc	Amstrad	£9.95	US Gold
New Assembler/ Monitor	Ut	Amstrad	£19.95	Picturesque
DDD Base	Ut	BBC	£29.94	Gemini
DD Calc	Ut	BBC	£29.99	Gemini
DDD Plot	Ut	BBC	£29.99	Gemini
Dork's Dilemma	Arc	C16	£6.95	Gremlin Graphic
Romper Room	Arc	C16	£9.95	Beyond
Sword of Destiny	Arc	C16	£6.99	Gremlin Graphic
Clumsy Colin	Arc	Commodore 99	£1.99	Mastertronic
Dropzone	Arc	Commodore 64	£9.99	US Gold
Frankie go Hollywd	Arc	Commodore 64	£8.95	Ocean
Kikstart	Arc	Commodore 64	£1.99	Mastertronic
Spooks	Arc	Commodore 64	£1.99	Mastertronic
The Captive	Arc	Commodore 64	£1.99	Mastertronic



of the original, retaining features like the extra point flags and the mines. It's machine code and fast, but suffers somewhat from small characters and simple sprite design. But it's a workmanlike copy of the original that won't massively disappoint fans.

Program *Time Bomb*
Price *£6 50*
Micro *Amstrad*
Supplier *Black Knight Software*
PO Box 132
Chislehurst
Kent BR7 6LJ

DÉJA VU

Nodes of Yesod you may have seen advertised. It's by Odin Computer Graphics, a company I am previously unfamiliar with – but they have confidence enough to be spending a lot of money on advertising and doing versions for virtually every micro under the sun. We have the Spectrum version, it comes in an Ultimate style box with an Ultimate style booklet which explains the plot and, like Ultimate, lists the features of the game and finally it costs £9 95. Yes, I thought it was going to be awful too.

Actually it's good graphically it looks like *Underwurlde*-era Ultimate – very big, well-designed sprites with lots of detail. There are other Ultimate-like touches, too, although you could say that they are the kind of plot elements found in most arcade adventures. The idea is that you collect Alchiems, eight altogether, and take them to a room with a monolith.

There are also moles – capture one of these and you can eat your way through some walls. The setting is the surface and caverns of a moon, this being zero gravity your movement is somewhat odd – you can perfect an overhead leap that will take you from rocky plateau to plateau in a manner that is curiously reminiscent of *Impossible Mission*.

The game should do well but I couldn't help having



some reservations. It does tend to have the aura of all the good bits of other games being put together in a somewhat calculating manner. It has *Underwurlde*-like backgrounds with expanding plants similar to *Sabre Wulf* and bizarre animated sprites reminiscent of *Manic Miner* (and countless others). It's not alone in these failings, of course, and at £9 95 is pretty much top wack on the Spectrum.

I'm not sure this is worth it, given the sense of deja vu it leaves.

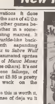
Program *Nodes of Yesod*
Price *£9 95*
Micro *Spectrum*
Supplier *Odin Computer Graphics*
Steers House
Canning Place
Liverpool
Merseyside
L1 8HN

OBSTACLES

Every so often Mastertronic release games at £1 99 which are so good they can be recommended regardless of price. *Action Biker* would be a must at £7 95, at £1 99 I suggest you don't waste time reading this, go out and buy a copy.

Part of the explanation for the price may be a deal Mastertronic have done to advertise KP Skips – an ad for them appears as a loading screen – maybe this has subsidised the whole operation.

The game involves a *Zaxxon* style 3D scrolling screen and a small but cleverly animated motorbike that you control. The playing area contains a



number of tricky obstacle courses, switchback, jumps and so on which require much judgment to master. There are also objects to be discovered, which help you with some of the obstacles.

Graphically, it's stunning and the music and sound effects are pretty good too. At £1 99 it's already a steal so pay for it, don't copy it. NB The Spectrum version is completely different.

Program *Action Biker*
Price *£1 99*
Micro *Commodore 64*
Supplier *Mastertronic*
Park Lorne
111 Park Road
London NW8

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly*, 12 13 Little Newport Street, London WC2R 3LD

This Week

The Chess Game	Arc	Commodore 64	£7.95	Micro Classic
Monster Trivia	S	Commodore 64	£6 95	US Gold
On Court Tennis	S	Commodore 64	£10 99	Activision
On Field Tennis	S	Commodore 64	£10 99	Activision
Musical Studio	Ut	Commodore 64	£14 99	Activision
Lazy Jones	Arc	Einstein	£12 95	Terminal
Clumsy Colin	Arc	Spectrum	£1 99	Mastertronic
Highway Encounter	Arc	Spectrum	£7 95	Vortex
Nodes of Yesod	Arc	Spectrum	£9 99	Odin
Paws	Arc	Spectrum	£5.95	Artic
The Covenant	Arc	Spectrum	£6 95	PSS
Waterloo	S	Spectrum	£11 50	K W Software
Rockman	Arc	Vic 20	£1 99	Mastertronic
RIP	Arc	Vic 20	£1 99	Mastertronic

Key **Ad** – adventure, **Arc** – arcade, **Ed** – education, **S** – strategy-simulation, **Ut** – Utility

Top-down

When younger I always used to read the editorial in the *Sunday Express* for the sole purpose of making myself as angry as possible since I disagreed with almost every sentence and every phrase

Since I discarded this masochistic pleasure, I find I can now effortlessly recreate the emotions previously engendered by Sir John Junor by the simple expedient of reading the writings of people – like Boris Allan – extolling the virtues of a top down approach to programming and learning

The idea of a top down approach is one commonly advocated in program design. These ideas advanced by Dijkstra, Hoare Wirth and other influential programmers and language designers have taken firm root in computing mythology Allan seems to suggest that the particular ideas applicable to writing computer software (and usually used to best effect by sophisticated adults) is an appropriate method for teaching problem solving skills in general and in mathematics in particular

The problem as I perceive it, is that there is an immediate analogy between solving problems in mathematics and in developing a large-scale computer program. One is a convergent activity the other a divergent activity In designing a computer system one works from the top-level the specification of a particular system down through a series of refinement levels until one reaches the stage where the system is complete But one has effectively done more than just solve one problem. Something much more complex has been achieved than that. Many sub-problems have been solved, but also a symbiosis has been achieved allowing the separate sub-solutions to co-operate in such a way that an overall or macro problem has been solved

This cannot be compared with what is normally required when a child (or indeed adult) is asked to solve a problem in mathematics. here the requirement is to solve one problem. On the way to that single solution subproblems may occur, but they can be solved sequentially

One attempts a synthesis towards a single solution. On the contrary people who design the solutions to computer systems are called systems 'analysts'

According to my dictionary an analyst is some who 'resolves into simplest elements – a clear description of a top-down approach.

My own prescription for successful problem solving skills would include the two elements 'analogy' and 'inspiration By 'analogy' I mean the ability to recognise how this particular problem is related to a previously solved problem and how that might aid in this particular solution. 'Inspiration is almost impossible to define, but would be readily understood by most readers. Certainly it should play a key role in the analogy component of solution.

Now it is my contention that both inspiration and the learning process itself have a strong 'bottom-up' component The suggestion that we should abandon this element of problem-solving is wildly wrong

With Logo children learn by themselves how to program simple shapes using the turtle graphic commands they then incorporate these steps into procedures these procedures are used as building blocks for more complex shapes. which in turn become procedures used for even more complex shapes This is by no stretch of the imagination 'top-down design' In fact it is the opposite case of 'bottom-up design'

Similarly in the language Forth, it is normal to start with colon definitions low-level procedures which achieve initially small scale objectives within a larger program and in fact can be added to the vocabulary of the Forth language Forth is a classic case of a computer language which has been designed to be implemented bottom-up

Of course, any sensible program designer does not design Forth or Logo programs just from the bottom-up I am not suggesting that What I am suggesting is that most normal Forth and Logo programmers find a compromise between bottom-up design and top-down design. Top-down design achieves the purposes of an overall strategy – a systematic solution to the problem in hand and is particularly good for achieving sensible data structures allowing data to be passed between different modules of the program. bottom-up design is sensible for designing low-level and intermediate-level modules which can be used as 'library' procedures. It has the advantage that each module can be thoroughly tested before being slotted into place in the overall structure

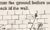
I am sure that a purely 'top-down approach to problem solving is neither desirable nor practical I am also certain that we cannot abandon such elements of 'bottom-up learning since to me bottom up design often comes closest to the ideal of child-centred, experimental learning

Tim Marvyn

Puzzle

Puzzle No 163

On the wall at the bottom of the garden is Montmorency the spider As can be seen from the picture, he is at the bottom of the wall at ground level 100 feet from the end of the wall. Also on the wall is a tasty young fly dozing in the sun. The fly is situated 60 feet away from Montmorency at an elevation of 45 degrees However, the *fly is actually* on the *other side of the wall*, and so to reach the fly Montmorency will have to travel to the edge of the wall, and then go round in order to catch the fly To reach the fly by the shortest route he will have to cross the wall at a point a little way from the ground before continuing along the back of the wall.



How long is the shortest route (to the nearest inch) and how high above ground will he be when he goes round the back of the wall? (NB No allowance need be given for the thickness of the wall.)

Solution to Puzzle No 158

The number 8524 will produce the word 'Haul'

```
10 FOR N=9102 TO 9535
20 LET S=N*N
30 LET B$=STR$ S
40 LET W$=""
50 FOR F=1 TO 7 STEP2
60 LET L$=MID$ B$,F,2)
70 IF VAL L$<65 OR VAL(L$)>90 THEN GOTO 110
80 W$=W$+CHR$(VAL(L$))
90 NEXT F
100 PRINT S W$
110 NEXT N
```

The program checks all perfect squares in the range 65656565 (ASCII equivalent 'AAAA') to 90909090 (ASCII equivalent 'ZZZZ'). These are square in the range 8102 to 9535 The resulting squares are split into two-digit pairs, and if all four pairs form numbers in the range 65 to 90 inclusive the CHR$ equivalent is printed out.

Winner of Puzzle No 158

The winner is D A Evans of Roath Park, Cardiff, who receives £10

Rules

The closing date for Puzzle No 163 is July 17.

The Hackers




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